Second District Dental Society—March Meeting.

A regular meeting of the Second District Dental Society of the State of New York was held on Monday evening, March 11, 1901, at the "Argyle," corner Pierrepont and Fulton streets, Brooklyn.

The President, Dr. W. J. Turner, occupied the chair, and called the meeting to order.

The First District Dental Society of the State of New York, the New York Odontological Society, the New York Institute of Stomatology and the Central Dental Association of Northern New Jersey had been invited to attend this meeting, and a large number of their members were present.

The paper of the evening was read by Dr. R. Ottolengui, of New York.

This paper in effect challenged the correctness of extensive cutting towards the gingivae. It was written several weeks in advance of the meeting and copies sent to four gentlemen who would be in opposition to the views of the essayist, and to four who would in a measure support him. By this means the reading of the paper was followed by a prepared debate on the subject, an equal number of men taking each side of the question.

The programme announced the subject of the debate as follows: *Resolved,* That it is necessary to the future safety of carious teeth that the gingival enamel margins in approximal cavities should be extended so as to lie under the gingival gum septa. Affirmative: Dr. C. N. Johnson, Chicago; Dr. G. V. Black, Chicago; Dr. E. K. Wedelstaedt, St. Paul; Dr. M. L. Rhein, New York. Negative: Dr. E. T. Darby, Philadelphia; Dr. B. Holly Smith, Baltimore; Dr. William H. Trueman, Philadelphia; Dr. S. G. Perry, New York.

Extension for Prevention.

With Special Relation to the Gingival Enamel Margins in the Preparation of Approximal Cavities.

By RODRIGUES OTTOLENGUI, M.D.S., New York.

As long ago as in the days of Varney, and later, when Marshall Webb was one of our most skilful operators, extensive enlargement of cavities was advocated. Frail walls were cut away and the chisel was used heroically in order to reach certainly sound territory.

The doctrine however became a dogma only when Dr. Black formulated his scientific theories in relation to cavity treatment in a series of papers entitled "The Management of Enamel Margins," published in the *Dental Cosmos* in 1891. During the decade which has passed since then the theories therein advanced have been widely taught in several prominent schools, and recently Dr. C. N. Johnson has given us his admirable text book upon the "Principles and Practice of Filling Teeth," in which Dr. Black's views are reiterated.

The theories advanced by Dr. Black were ably presented, and, as with all his writings, are supported by scientific assertions not easily refuted. It is therefore with some temerity that I venture to present opinions widely at variance with his tenets, but I do so with all respect for him and for the others who will argue against me, declaring that I am as ready to be converted as to have my own arguments prevail; for in this, as in all discussions, it should be borne in mind, that the true aim of scientific debate is the betterment of practice in the interests of our patients, rather than the aggrandizement of any individual.

If I am to dispute the position of Dr. Black, it is requisite that I should first clearly define his proposition. I cannot do this thoroughly without quotations from his writings which would occupy too much time. After carefully reading what he has set down I hope that the following statement will be just to him and adequate for the purposes of the present discussion.

Dr. Black's Dogma.

He tells us in relation to approximal surfaces that the point most liable to decay is slightly root-wise from the point of contact, and that the liability decreases as we recede from that point. Decay is

most prevalent where food is most likely to be retained. Now I quote his exact words: "Extension for prevention, is extension of the enamel margin from a line of greater liability to a line of lesser liability. Or, to change the phrase, it is to cut the enamel margins from lines that are not self-cleansing to lines that are self-cleansing."

As the theory which I am chiefly to combat is extension of the gingival enamel margin to a point beneath the gum I will quote a few sentences to show that such is Dr. Black's teaching. Discussing approximal cavities in molars he says, "In these cases all of the gingival enamel margin should be covered by the free margin of the gum." In relation to bicuspids he says, "Upon both buccal and lingual angles the line of the enamel margin should run directly to the free margin of the gum and join the gingival enamel by a short curve. All the gingival enamel

Fig. 1.

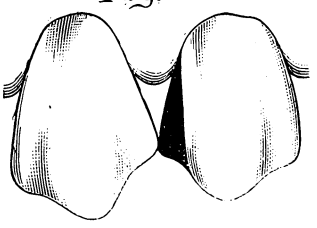
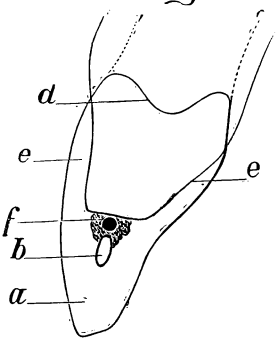


Fig. 2.



margin should be covered by the gingival gum septum." I here introduce his illustration which indicates that the gingival margin is really to be under the gum. See Fig. 1.

Lest it may be supposed that these quotations have reference only to cavities already large, let us come to a consideration of the anterior teeth, for here the dogma is laid down in no uncertain language. Dr. Black says, "It is a mistake to fill very small cavities in the proximate surfaces of any of the teeth, none the less in the incisors. It generally means refilling within a few years, for the simple reason that with a slight recession of the gum the enamel margins are in a position to be seriously affected by corrosive agents. For these reasons small or medium cavities occurring in the proximate surfaces of the incisors should be cut freely towards the gingival line, and broadened into angles

labially and lingually to self-cleansing lines. The whole of the gingival enamel margin should be covered by the gum septum, and reasonable provision made for recession of the latter when all is completed." That the full significance of this may be comprehended see Fig. 2, from Black, in which *f* represents penetration of enamel by caries, the shaded portion an area of corrosion surrounding the same; while in Fig. 3 he tells us we have the filling with enamel margins formed on correct lines for the prevention of recurrence of decay.

Dr. Johnson's Views on Extension.

Leaving Dr. Black, I would state the proposition as viewed by Dr. Johnson, who evidently has adopted the theory, but practices it with some caution. The bare statement of his rule sounds radical enough, his words being, "This wall (the gingival) should be extended rootwise sufficiently to carry the margin of the fill-

Fig. 3.

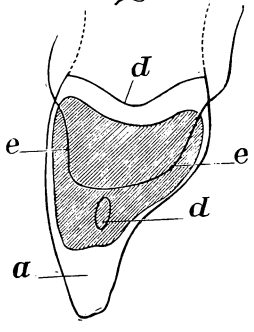
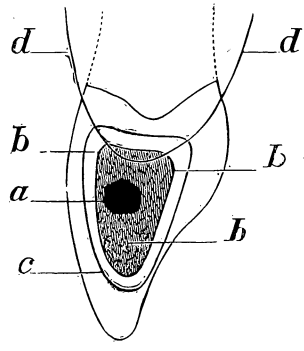


Fig. 4.



ing well under the gum in accordance with Fig. 33." His figure is reproduced in my Fig. 4, in which *a* shows a small filling, *bbb* recurrence of decay and *cc* the line to which extension should be made for safety, the gingival enamel thus being under the gum which is outlined at *dd*.

The above quoted rule is radical, but elsewhere in the work Dr. Johnson makes restrictions which indicate a conservative application of the method. He would avoid extensive cutting in a person in very nervous condition, as well as where the tendency to caries seemed to be slight. Age also would be a consideration. In a young person whose mouth showed extensive ravages of decay the indications would be for the most heroic work, while in a well matured individual, showing only an occasional cavity, extreme cutting would be unnecessary. Likewise

esthetic considerations would hold sway in the anterior part of the mouth, many persons perhaps (if I may once more introduce here a statement of one of my own patients) preferring to be "temporarily beautiful rather than to be permanently hideous."

Despite these exceptions Dr. Johnson really adopts the dogma of Dr. Black, for he declares that if in deference to a patient's wishes these small hidden fillings are inserted it should be explained to the patient that the work is temporary in character and he says:

"In brief, the operator's attitude toward the practice of extension should be to aim always at the most ideal and permanent form for his cavities, and in every instance where he deviates from this it must be on account of some well defined reason for doing so."

I have now, I believe fairly stated the positions of Drs. Black and Johnson, and may proceed to discuss the dogma. The first test of a theory must be as to its correctness, and I frankly admit at the outset that it would be difficult to substantiate any denial of the general correctness of Dr. Black's position. That is to say, a cavity filled as he describes, with the gingival and other extensions as he directs, the fillings being absolutely perfect when completed, would be well filled and as reasonably immune from decay as the hand of man could make it. But there is another and equally important test which all theories must withstand, the test of applicability and practicability. As to applicability, I shall argue that however well the theory may fit large cavities it is inapplicable to small ones. As to practicability, I shall undertake to show that in order to obtain theoretical immunity under conditions not present at the time of filling, but premised as liable to exist at some future period, what should be a very simple procedure is changed into an operation complex in character, requiring the nicest skill in its accomplishment, and in each instance accompanied by an obstacle the surmounting of which is liable to produce the very pathological alteration of tissue which the extension is intended to meet.

Furthermore I shall endeavor to cast a doubt upon the theories relative to recurrence of caries, which are the bulwark of the dogma.

Inapplicability of Dr. Black's Dogma.

As a general classification of approximal cavities, we may allude to them as small, medium, and large, the two extremes tiny and extensive being left out of this discussion since in the tiny, great extension would be almost criminal, while in very extreme cases, of course further extension is uncalled for. I have admitted that the cavity shape, suggested by Dr. Black may be applicable to large cavities, but let us see what is involved in its application to medium and small cavities.

First we find that from the moment of adopting the rule, we shall no longer have small, medium, and large fillings. Henceforth all will be large, for all cavities are to be extended to practically the same limits and will vary in size only as teeth are large or small. Patients, therefore, under this mode of treatment, whenever unfortunate enough to present with approximal cavities must submit to lengthy operations instead of sittings of brief or moderate duration. They must not only endure the pain of the removal of carious tooth bone, but their agonies are to be further prolonged while the delightful engine bur burrows into structure not attacked by disease. Next to the cutting necessary in the preparation of cavities, patients suffer most perhaps during the process of polishing the filling. From a comparatively brief period of pain, which would be involved in the polishing of a filling all margins of which might be readily accessible, endurance must continue while the dentist polishes not only a larger area of metal, with comparatively greater ability to transmit the heat of friction, but the treatment of the gingival margin now brings the polishing tools into proximity, yea into contact with the gum tissue. Finally, at the termination of this enjoyable session the patient of course must meet a proportionately larger fee. And all this for what reason? Because at some dim and distant period the gum septum may recede so as to afford greater room for the lodgment of food, in which problematical condition there is a possibility, not a certainty, a possibility I say, that decay may recur around the filling inserted without enlargement of the cavity.

From this view point, I ask you all, suppose that the situation were fairly and honestly explained to each patient what proportion of our clients would sanction extension to and beneath the gum margin in order to avoid this possible immunity from caries under conditions not certain to occur? Let each answer for himself from his experience with the men and women of his own practice. Then I will ask you what answer will you make to the patient who, being inclined to submit to the major operation, should inquire: "If I let you do that, can you guarantee that decay will never attack any part of the filled surface of that tooth?" And what reply will the advocates make to me when I ask, "If you cannot give this guarantee to your patients, by what right do you remove the sound tissue of his tooth and replace it with a foreign mass?"

So much for the applicability of the method from the view point of the patient; now let us be a little more selfish and consider the proposition from the standpoint of the practitioner. Is it not a fact that all of us view with distress cavities which extend beneath the gum margin at the time when they present to us? Why? Because we have been taught to believe that no filling will save a tooth which is not perfectly

polished along its entire margin, and experience has shown that the gingival margin beneath the gum is the most difficult place in which to be assured that the filling at no point overlaps, but is everywhere flush and highly polished. This being a fact, and it is a fact that cannot be disputed, how shall the dentist receive a proposition to place all approximal margins in this inaccessible place? Certainly not with pleasure. In mesial approximal cavities, especially in the incisive region the rule may not be so difficult to observe, but if such procedure is necessary to save a tooth having a mesial cavity, it must be equally required on the distal surface. In distal cavities however the complexities increase and much labor must be added to the day's work of the man who ruthlessly carries the gingival enamel margin to and beneath the gum septum in distal cavities in bicuspids, and in molars first, second and third. The rule of course cannot make an exception in favor of short teeth where extension would only double the size of the cavity, but of course must likewise be followed in teeth of such length that the cavities may be trebled in dimensions. The difficulty of obtaining space in which to work, in mouths where teeth are rigidly set in crowded arches would hardly be any excuse for shirking this extreme extension for prevention, provided no other mode leads to future safety. Then again in mouths superabundantly provided with saliva, whatever the temptation to fill the small approximal cavity in the lower molar, our conscience would not permit us to thus save labor, for it is in the fluids of the mouth that the germs of decay propagate and consequently the more saliva the more rigid the need of extension for prevention. Again, the rule being correct, we must not fail to apply it even though because of its bell-shaped crown or from malposition the tooth be so tipped, that the greater the extension, the more inaccessible would become the gingival enamel margin. With this I will pause in my discussion as to applicability. If I should be told that I have cited extreme conditions, conditions under which the rule may be shirked, I will answer: "If in these adverse circumstances I can save the teeth, without the extension to the gingival gum septum, then in easier cavities I certainly do not require the method."

Impracticability of Dr. Black's Dogma.

I turn now to a discussion as to practicability, and here I would be distinctly understood. I shall not argue that Dr. Black, Dr. Johnson, Dr. Wedelstaedt, Dr. Rhein or any other capable man cannot adopt Dr. Black's mode of practice and save teeth successfully. Indeed, to say this would be to admit that dentistry cannot save teeth where extension of cavity margins has reached the gum septum through the ravages of caries. But again I combat the teaching

from the standpoint of the general public. It is, as I see it, unwise teaching because its successful application must rely upon a degree of skill which is above that of the average dentist, and it is the average dentist to whom the majority of patients must turn for attention. I am aware that some will say that only the highest must be taught, and that methods of practice must not be measured by the incapacity of practitioners. But in reply I say that a method of practice which is within the skill of the average practitioner, and with which the average man can save thousands of teeth, should not be thrust aside for a new dogma, more difficult in its practical application and with no certain promise of advantage, for I shall presently endeavor to prove that the extension of the gingival margin beneath the gum septum adds nothing to the security of the tooth.

From a practical standpoint what is exacted by this cavity preparation? The chief point of difference between this mode and that of the old school is that the operator must have the skill to make the extension, the judgment to know how far not to go, the ability to properly fill against this margin despite the lessened strength of the enamel and the added inaccessibility, and finally and most particularly he must possess the skill to thoroughly polish this margin, and here I think we reach the obstacle which I have elsewhere said may precipitate the very danger against which the method seeks salvation.

To thoroughly comprehend the point which I am about to make let me recapitulate in order to bring before your mind at this juncture the reason for this extension. Dr. Black's argument is that the lodgment of food, which is not removed, precipitates decay. That caries begins near the contact point where there is normally a slight space between the contact and the gum septum. The extension must reach a point which will bring the margins under the gum even after shrinkage of the septum.

Is it an invariable rule that atrophy of the gum septum must occur? And when atrophy of this tissue does supervene, is it certain that caries will recur around all small approximal fillings, however well made? To both of these queries I think we are obliged to reply negatively.

I believe that Dr. Black himself has not explained to us the causes which lead to recession of the gums, but I fancy it is safe to say that atrophy in this region as elsewhere is pathological rather than physiological even though it may be the constant accompaniment of advancing years; for it cannot be said that at such an age recession invariably begins, nor that its progress is so much each year. Consequently as a pathological condition we cannot premise certainly that a patient, at the time in a perfect state of health, is bound to suffer in this manner.

We may, however, argue that it is highly probable that at and beyond the age of sixty the gum septum will not be as sound and full as at the age of ten, but as an offset to this it can be claimed that caries is usually not as rampant in old age as in youth, and consequently that with advancing years, though there may be a decrease in the fullness of the gum septum, there is a compensating increase of immunity from decay.

On the other hand, we do know that very rapid destruction of gum tissue about the necks of teeth may be and usually is caused by traumatic injuries, and I venture the assertion that the gums around teeth treated by Dr. Black's method, even by Dr. Black himself, will be more liable to atropy than the gums about teeth in which small approximal fillings have been inserted by men of only average skill. But even though Dr. Black or Dr. Johnson or any other disciple of this practice could show hundreds of mouths in healthy condition after the insertion of such fillings, I believe that such would not be the result in the majority of mouths, were this practice to be universally adopted. I make this statement because I believe there are few men indeed who can say that they have placed fillings, the gingival margins of which lay under the gum, without ever having caused the gum to bleed during the process of polishing, while not one of us would admit the necessity of shedding blood when polishing a filling, the margins of which do not approximate gum tissue. If this proposition be admitted, the corollary is that the small filling is safer, since blood is drawn from the gum only by injury, where the tissue is primarily in a state of health.

Causes of Recurrence of Decay.

Upon these arguments, for the time I rest my declaration that the extension advocated by Dr. Black is both inapplicable and impracticable in general practice, and I approach the task of disproving the need of such radical procedure.

The argument for this extensive cutting is based upon, first, the alleged fact that lodging place for food invites caries even in a filled tooth; and second, that cavity margins must reach regions either self-cleansing or protected from encroachments of food.

A word or two as to self-cleansing. What does this term mean? It is constantly recurring in our literature, and yet to my mind it conveys no intelligible thought whatever. Certainly no tooth can cleanse itself, and consequently no part of a tooth can be self-cleansing. Probably the term means to imply a position which may be cleansed without resort to a tooth brush. How? By the tongue and lips, and by the food itself during mastication. To dispose of the last proposition first I need only remind you that when a patient eats on one side exclusively, it is the opposite side of the mouth which is slimed with filth. As to the

tongue, it is manifest that any attempt at cleansing by the passage of that organ over the lingual or labial surfaces would tend to remove debris only from the flatter surfaces, crowding the same into the spaces between the teeth resulting in an extra accumulation in those locations. The action of the lips would be the same. Thus if reliance be upon so-called self-cleansing we find that the scavengering actually deposits extra filth exactly where we are advised to place our cavity margins by lateral extension, unless such extension be carried so far as to reach the flat surface of the tooth, producing unsightly results which would not be acceptable to the growing sense of esthetics observable in all our communities, at least in the centers of massed population. In regard to lateral extension, therefore, I must believe that the depredation is without adequate excuse, since reliance upon self-cleansing alone would be futile, while if the brush be properly used the margins will be reached without bringing them into sight. Passing from this phase, lateral extension, which of itself is almost worthy of a lengthy thesis, I return to the main subject, the gingival margin.

Here I must make a statement in the interest of what I conceive to be truth, and for the sake of recording experience. During the twenty-five years that I have been in practice I have heard again and again of the vulnerability of the gingival margin. I have read essay after essay upon the recurrence of decay in this situation. I have consequently earnestly sought for it, and strangely enough I have not found it. In my own practice, whether the fillings have been my own or from other hands, I have never seen recurrence of decay at the gingival margin of a perfectly inserted and polished filling. All recurrence of caries here as elsewhere, observed by me, has been due to faulty manipulation or imperfect polishing.

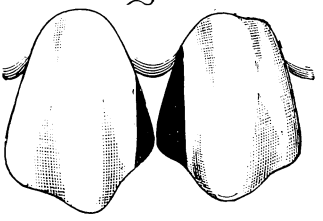
If this be true, that recurrence of decay at the gingival margin is due mainly to unskilful workmanship, it follows that something more than the mere presence of food causes caries. Let me make this clearer. I maintain that caries is more liable to occur between two teeth in contact which have not previously been attacked, than between the fellow teeth on the opposite side of the mouth where both teeth have been filled perfectly, even though the fillings be small. My argument in maintenance of this position rests upon clinical experience rather than upon laboratory experimentation. My belief then is that the initial inroads of caries occurs at the point of contact rather than near it, and that the friction occurring during mastication arising from the movability of the teeth in their sockets is a factor in the depredation. As this assertion rests only upon experience I will set down a few clinical facts upon which I base the deduction.

First: I have observed that where only one tooth is affected, and filled, contact being thus restored, decay is more liable to occur in the sound tooth, than in the filled tooth, and I am speaking of small fillings.

Second: In mouths under constant observation, I have noted that where both teeth are carious and filled perfectly, even with small fillings, decay in unfilled teeth in the same space on the opposite side of the mouth may be observed within a few months or years, while no recurrence of decay is seen about the filled teeth.

Third: I have observed that in cases of malposition, the contact between two teeth being extensive, caries will occur between such teeth in advance of decay in the similar space on the opposite side of the mouth, where no such abnormal contact is to be found.

Fig. 5.



Fourth: That when caries appears between malposed teeth in abnormal contact, the area of corrosion, even prior to actual penetration, will have the shape of the contact and be there situated.

That unfilled teeth are more liable to decay than filled teeth is significant, and it must be true, for otherwise the major part of our work would be the replacing or patching of fillings that have failed, rather than the insertion of fillings in new cavities. Recurrence of decay then, even by the methods in common vogue is less frequent than the decay of sound teeth. I will go further and declare that recurrence of decay is less frequent than the permanent success of fillings. In relation to the gingival margin, my experience has been diametrically opposed to Dr. Black's dogma. I venture to state that eighty per cent of the instances noted by me have been where the gingival border was under the gum tissue. Dr. Black cites the fact that he has removed and replaced many fillings which had failed at the gingival margins, which fillings had been placed by practitioners of national reputation. In reply I must say that reputation is not skill.

Cases From Practice.

I will cite a case from recent practice. I have in my care at the present time a patient who for years entrusted herself to a dentist of international reputation, who nevertheless, judging from this and other mouths, possesses more ability to gain reputation than skill in dental practice. Let us consider him a man of average ability, certainly not above that. I found the approximal surfaces of the first and second right upper bicuspids contoured with gold. Fig. 5. The fillings looked well; the knuckle was good as well as the occlusion. In the mesial surface of the second bicuspid the filling did not reach the gum. The distal filling in the first bicuspid on the contrary showed the gingival margin well beneath the gum even in its present possibly receded position. An examination disclosed the fact that the filling in the second bicuspid, the one with the gingival margin clear of the gum, was in perfect order. The filling in the first bicuspid, the one where the gingival margin was well below the gum, was likewise perfect in all places above the gum, but considerable recurrence of decay was present below the gum. This recurrence was so extensive that after removal of the filling treatment was required in order to force the gum away sufficiently to permit exclusion of moisture during refilling.

What is the moral of this, and this is no isolated case in my experience? The moral is that it is not the mere placement of the gingival enamel margin below the gum which will assure immunity. It is needful that the filling after insertion shall be perfect, and thoroughly finished, and this is why my friend with the international reputation but only average skill saved the tooth where the gingival margin was free from the gum, and failed where the margin was under the gum. And I ask, if the average practitioner can save teeth and make permanent fillings without carrying the margin under the gum, why should the patient be asked to endure extra suffering, show extra areas of gold, and pay extra fees?

In conclusion I wish to allude to a case mentioned in Dr. Johnson's book. He relates that in the mouth of a certain Miss between the ages of nine and sixteen, decay was rampant; recurrences of decay around filling being so common as to preclude the use of gold. I have had but one case of this character, but it is pregnant with significance. At the outset, the girl being about eleven years of age, I filled her teeth with gold. I remember one tooth quite well, a lateral incisor in which a festoon labial cavity was necessarily united with a distal approximal cavity. I placed in all eight approximal fillings in incisors and bicuspids. In none of these did I depart from my usual custom. Extension of the cavity margins was to reach sound territory only. None of the gingival

margins were placed below the gum. Within a year three fillings were removed and replaced because of recurrence of decay. A year later these and three others needed attention. Subsequently all the gold fillings were removed, and gutta percha was substituted, the only instance in my practice where I have done such a thing. The significant feature of these cases was that in not one had the recurrence of decay appeared along the gingival margins. Invariably it was along the labial or buccal borders all of which reached the so-called self-cleansing lines, especially the lateral incisor which was twice filled with gold, both fillings failing along the labial margin the gingival borders remaining intact. The cause of decay in this mouth was lack of cleanliness. No arguments of mine nor of the parents seemed adequate to make the child use a brush. Thus without the brush we find that self-cleansing of teeth is impotent to check caries. Yet even in such a mouth and under conditions of absolute filth the gingival margins were not the sites of failure. When reaching young maidenhood this girl became quite cleanly in her mouth, and her temporary fillings have been replaced with gold or porcelain and today there is no more evidence of recurrence of decay, and still my approximal fillings do not extend under the gums.

In the presence of experiences such as these, and with the knowledge that recurrence of decay is not common around small fillings even though atrophy of the gums or worse still pyorrhea should supervene, why should I cut away the sound tissues of my patient's teeth?

Extension with me rigidly involves all caries or enamel that may be called infected, but it goes no further and seeks no imaginary lines of immunity, which to my own mind do not exist.

Extension for Prevention.

By C. N. JOHNSON, L.D.S., D.D.S., Chicago.

The limited time at my disposal for the preparation of this paper renders it necessary for me to touch on only a few points and on these very briefly. At the outset I wish to beg the indulgence of the Society to express my sincere thanks to Dr. Ottolengui for the courtesy ex-

tended in allowing me to read his paper in advance and for the very fair manner in which he has endeavored to state the position taken by Dr. Black, myself, and others upon this question. No two men—particularly if they be energetic thinkers—need be expected to believe precisely alike on all subjects, but if scientific discussions were invariably carried out in the spirit of equity and frankness exhibited by Dr. Ottolengui on this occasion, the general result would be far more favorable to advancement than we are accustomed to find it.

This entire subject of extension for prevention has been somewhat misconstrued by the profession, possibly as the result of faulty methods of expressing it on the part of those who have written upon it, and in this connection I am willing to place myself as fully at fault as any. The general impression seems to be that extension for prevention means the invariable cutting of exceedingly large cavities, which would make of its advocates extremists of the most extreme type. This is not in accordance with facts, though it still remains true that we do find certain conditions influencing certain surfaces of certain teeth, where, in the attempts to combat an attack of caries, it becomes necessary to make broad cavities if we wish to have any assurance of checking the disease. But this subject is too extensive to consider in detail at this time and in accordance with the trend of Dr. Ottolengui's paper I must confine myself to the question of the gingival enamel margin.

To this end I trust I may be pardoned for quoting from a recent paper of mine on cavity preparation read before the Ohio State Dental Society and published in the February number (1901) of the *Ohio Dental Journal.*

Judgment Required in Extending Margins.

"The extension of the cavity rootwise at the gingival margin is also a question calling for careful consideration. It may be laid down as an axiom that wherever the gingival margin of a filling on a proximal surface extends under the free margin of the gum, so that the gum tissue in occupying the interproximal space covers a portion of the filling, the margin so covered is absolutely safe from a recurrence of decay, provided the filling is properly inserted and the gum tissue healthy. This would seem to argue strongly for such an extension of the cavity as to ensure this kind of protection to the filling, and unless there is some special reason against it, the cavity should be so formed. This may appear like very radical teaching, but a careful study of the conditions will reveal the fact that it is not so radical as it seems. In those cases where the gum extends normally into the interproximal space, it will require but a very slight extension of the gingival margin to carry it well under the gum, and in fact in

most cases the decay has already carried it there. In other instances the cavity is found to dip down rootwise into the dentine at this point, leaving the enamel standing. This edge of enamel should never be allowed to remain in any event, and its removal will almost invariably carry the gingival margin safely under the gum. But in those cases where there has been an extensive and permanent recession of the gum, so that there is an appreciable distance between the decayed cavity and the gum margin, it would be folly to attempt to cut through sound tissue to the extent of two or three millimeters for the purpose of carrying the filling under the remaining gum. It is a question of judgment with this, as with other matters calling for discrimination in different cases, but the principle of protection to the gingival margin of the filling should never be lost sight of."

Relation of Gum Septa to Extension.

One point in this quotation I wish to emphasize particularly because it seems to me that in the discussion of this subject it has too often been overlooked. The normal form of the gum tissue in the interproximal space before there has been any recession—in other words, the form that we most frequently find in youth—is an arch with the crest of the arch reaching nearly or quite to the contact points on the proximal surfaces of the teeth. If the interproximal spaces in most children be examined they will be found perfectly filled with gum tissue even to the extent of passing so far crownwise on approaching the contact points as to thin out into a somewhat attenuated crest. It will thus be seen that any perceptible breaking down of the contact point from decay will at once carry the cavity under the free margin of the gum, and even in those cases where the gum has retreated as the result of the carious attack it will immediately reoccupy the space in its normal condition and form following the insertion of a well contoured and perfectly finished filling in these young patients. In fact, one of the problems which confronts the operator when called upon to fill these proximal cavities for children is to first force the gum sufficiently out of the way to get perfect access to the gingival wall of the cavity. It will thus be seen that in the cases cited no very radical cutting is necessary, to be assured that the gingival margin of the filling is covered by the gum. I think it is due to this fact that Dr. Ottolengui has observed so few failures at the gingival margin, and I have already called attention to this point in the book referred to by him. On page 87 I say: "The gingival margin of proximal fillings has often been alluded to as the 'vulnerable point,' even when fillings were well inserted, but this is hardly in strict accordance with facts. In reality decay seldom recurs along the gingival margin

proper. It usually begins at the gingivo-labial (or buccal) and gingivo-lingual angles. From here it may extend and involve the entire gingival margin, but the initial point of failure is usually at the angles. This is because there is a lodgment-place in these positions for deleterious matter to form undisturbed by friction, and unprotected by gum tissue."

As to the question of carrying the extension far enough to provide against any material recession of the gum subsequently, I find myself in somewhat close agreement with Dr. Ottolengui. I have not been in the habit of cutting the gingival margin extensively rootwise in those cases where the gum tissue was occupying the interproximal spaces fully and normally in the mouth, being operated on. It may be true that in some of these cases a subsequent recession of the gum will so expose the enamel as to lead to a recurrence of decay at this point, but as Dr. Ottolengui intimates there is also the likelihood and in most cases the expectancy of an approaching immunity from caries as age advances to the period when we are accustomed to find any appreciable recession of the gums.

But the fact still remains that with a given case in hand the proper preparation of the cavity involves the formation of the gingival margin at such a point that we are assured of an adequate overlapping of this portion of the filling by the gum following the operation—except in the extreme cases of recession already alluded to. As age advances from the period when we find the thin full crest of gum falling away into a more rounded outline and the space less perfectly filled with tissue, the necessity increases for a further extension, and to my mind no operator is doing his full duty to his patient when he ignores this fact. Dr. Ottolengui himself is liberal enough to admit, in discussing Dr. Black's position, that: "A cavity filled as he describes, with the gingival and other extensions as he directs, the filling being absolutely perfect when completed, would be well filled and as reasonably immune from decay as the hand of man could make it."

Practicability of Extension.

Now the question arises as to the practicability of doing this, and it is at this point that I must begin to diverge somewhat rapidly from Dr. Ottolengui's deductions. His contention, as I understand it, is that the operation involves too great a tax on the patient and on the operator, the first in the way of pain and the second in the way of skill. We must all recognize that there are certain cases where any cutting of the tissue beyond the limits of actual necessity is prohibited by the extreme sensitiveness of the teeth or nervousness of the patient, and no man of any judgment will overtax his patient for the

purpose of following out any ideal, but the extreme of sensitiveness or nervousness is not as universal as some would lead us to suppose, nor are the average cases so formidable to manage as is generally conceded by our writers. The great fault with the profession as a whole is that they are too prone to accept the limitations of a few cases as a guide in their conduct of all cases, and the general character of their work is thereby of a lower grade than it should be. With our present facilities for operating—facilities which are within the reach of the humblest practitioner—patients need not be unreasonably taxed in the performance of these operations.

As to the question of the requisite skill on the part of the dentist to do this work, and particularly as to the difficulty of finishing the gingival margin of fillings when extended under the gum, I fear that Dr. Ottolengui has painted an enlarged picture. I am in entire sympathy with him when he says the gum should not be lacerated, and I have frequently laid emphasis upon this point. I can even go so far as to admit that I do not wonder dentists are led to be prejudiced against extending the gingival margin under the gum after watching some of the clinics that I have seen where the gum tissue has been torn and gouged out of all semblance to itself by the clinician in his attempt to finish the filling. The tissue which succeeds this lacerated mass is essentially scar tissue and is seldom of the same character as that which originally filled the interproximal space. The gums will tolerate a certain amount of bleeding without serious injury—in fact they are sometimes benefited by bleeding—but this tearing up of the tissue so that the form of the septum is utterly destroyed cannot be anything but disastrous. Nor is it at all necessary in the insertion of the largest filling. To get the gum well out of the way so as to give good access to the gingival margin of the cavity and admit of a perfect finish to the filling without undue laceration is a very simple matter. It merely involves the packing of gutta percha in the cavity a day or two in advance of the operation in such a way that the gum is forced back and the interproximal space largely exposed to view.

Use of Gutta Percha in Exposing Margins.

The method of packing this gutta percha is sufficiently important to seem to merit just a word. When caries attacks the proximal surface of a tooth it usually leaves the gingival margin of the cavity curved with its convexity looking toward the alveolar process, and if the gutta percha is merely packed into the cavity and across the interproximal space against the adjacent tooth it leaves the buccal (or labial) and lingual festoons of gum standing farther crownwise than the gum midway between the teeth. These

festoons hold the rubber dam from readily passing far enough rootwise to expose the gingival margin of the cavity, and they are also in the way of finishing strips or files and are likely to be lacerated. To prevent this the gutta percha should be made to extend laterally each way so as to force the festoons of gum back on a level with the gum between the teeth. This will result in such an exposure of the space that a perfect view is had of the entire operation and ready access is gained for the insertion and finishing of the filling. When the gum is treated in this way, it will very rapidly reoccupy the interproximal space and cover the gingival portion of the filling after the operation. One of the cardinal points in the finishing of these fillings is that the proximal surface should invariably be polished before the removal of the rubber dam, so that a good view may be had of the margin and the gum be protected by the dam from laceration. If a few such precautions as these are taken the finishing of these fillings at this point does not to my mind present the difficulties usually attributed to it. It should be no more of a tax on the operator than any of the other routine work of the filling, but even if it is an additional tax, should we not cheerfully accept it if we can thereby render more permanent service to our patients?

Does Caries Recur Around Small Fillings?

This brings me to the consideration of the most important phase of the discussion, and I must ask the question pointedly whether in the experience of observant men it is not a fact that broad fillings on these proximal surfaces have more generally protected the teeth from recurrence of decay than have narrow fillings? Is it not true that there is a certain area on the proximal surfaces of teeth that is very prone to decay, and is it not also true that the farther we get away from that area the less the liability to decay? Dr. Ottolengui has stated a very significant fact though his interpretation of it is not the one that I shall place upon it. He has said that teeth in the same mouth are more likely to decay when not filled than when filled even though the fillings are small. Why is this? Is it not because the filling covers at least a portion of the susceptible area? And leading out from this argument is it not reasonable to expect that if the filling be made to include all of the susceptible area, that the liability to a recurrence of decay is correspondingly lessened? What is our clinical experience in the history of small fillings on these proximal surfaces? Have we not time and time again found failures through recurrence of decay even when the fillings were well inserted? It cannot be that all cases of this particular form of failure fall under the ob-

servation of only a few men who have pointedly called attention to it. It must be that the profession generally has seen these fillings fail repeatedly. And what is likely to be the impression on our patients when work has to be done over, and done over? Dr. Ottolengui in his argument has justly referred to the patient's point of view, and now let us consider this matter a moment in another direction. What opinion must patients form of the efficacy of dental operations when the fillings we insert for them have to be replaced by others at such short intervals? Does it not tend to lessen the confidence they have in the ability of dentists to save teeth? Are we not in duty bound to the patient as well as for the reputation of the profession to make our work as permanent as possible?

A Case from Practice.

A case in point will better illustrate my contention than pages of argument, and I give it all the more willingly because it seems to me typical of very many cases which present themselves for treatment. It will be seen that my experience in this matter is directly the opposite of that recorded by Dr. Ottolengui in his case of the two bicuspids. In my case a mother brought her daughter aged sixteen to me for examination of the teeth. I found the right upper first and second bicuspids filled with amalgam—the first in the disto-occlusal surface, the second in the mesio-occlusal surface. The filling in the first bicuspid was a large filling and the margins were in good condition; the one in the second bicuspid was a small narrow filling and there was extensive recurrence of decay at the gingivo-buccal and gingivo-lingual angles, reaching along the lingual margin nearly to the occlusal surface. I may say in this connection that it has been almost invariably my expereince that where a large filling and a small one face each other in this way, it is the small filling which fails first. On calling the mother's attention to the condition, she said: "Doctor, is it not possible to have my daughter's teeth so filled that they will last better than that? Those fillings were put in only a little more than a year ago and it alarms me to see such a cavity coming again. At this rate her teeth will all be gone while she is yet a young woman." Is it unique in the experience of dentists to hear such expressions as that? I think not.

I immediately answered that I did not know—that it depended on circumstances, the chief of which was as to whether the daughter could tolerate a more heroic operation than had been performed in the first instance. I had never operated for her and knew nothing of her behavior in the chair, but she instantly spoke on her own behalf and said that she could stand anything necessary to save her teeth. The question arises as to what was my duty in this case. Was it merely to tip

out the old filling, remove the decay and insert another one? If so, I failed in my duty, for what I did was this: I removed the old filling and the decay, then packed the cavity with gutta percha as already indicated, and dismissed the patient for one week. At the end of that time I cut the margins of the cavity freely away to such points that the friction of food in mastication will keep the margins of the filling wiped clean, and I inserted a gold filling that I honestly believe will serve that little girl till she is old enough to be a grandmother. And it was all done without so much as a murmur on her part, and no nervous tax that she remembered an hour after the operation.

Is this legitimate practice or not? Let me conclude by asking what the tendency is among the rank and file of the profession in their attitude toward the performance of the highest class of service for their patients? Is it not in the direction of a lowering of the standard of excellence, and a constant falling off into an easy slip-shod way of doing things, instead of a determined, energetic advance toward the highest and best there is in dentistry? And if this be true, is it not the duty of influential men like Dr. Ottolengui to discountenance anything short of the ideal, and to stimulate men only to the performances of such work that he may truly say of it: "It is as perfect as the hand of man can make it."

Treatment of Cavity Margins.

By E. T. Darby, D.D.S., Philadelphia, Pa.

The size and character of this audience would seem to indicate that the dental surgeons of this locality are intensely interested in this subject. Before entering upon a discussion of this paper I would like to pay a brief tribute to the two men whose theories and methods have been criticised in the paper by Dr. Ottolengui. I have the profoundest respect for the personal character and professional worth of each of these men. All are not scientifically inclined. For myself, I could not do the scientific work that Professor Black has done. He deserves the gratitude of the dental profession for his painstaking efforts in the way of scientific investigation. As for Dr. Johnson, he has given to the profession one of the best text books that we have ever had. When I read his book I wrote him that I was exceedingly pleased

with it, because of the accurate and concise way in which he had described every operation; and the scholarly manner in which he had expressed his thoughts.

When Dr. Ottolengui wrote me, asking if I would attend this meeting and take part in the discussion, I replied that I would, but that I did not know that I could agree with him in the views he might express, in advance of knowing what those views might be. He replied that his love of truth was greater than his desire to have me agree with his views if they were wrong. Upon those conditions I accepted the invitation to come here and speak upon this subject. I would also say that I think Dr. Ottolengui has approached the discussion of this subject in a very fair and honorable manner. After preparing his paper, he sent proof sheets of it to Dr. Johnson, Dr. Black and others who hold views contrary to his, giving them an opportunity to reply or take part in this debate. All fair-minded men must respect Dr. Ottolengui for the justness which he has shown in this matter.

Now as to the subject itself: it seems to me there is a misconception in regard to this whole matter. The radical methods advocated by Dr. Black in 1891 and the same repeated in a somewhat modified form by Dr. Johnson and others at later times would doubtless seem less radical if all the circumstances were fully understood.

I do not say that Dr. Ottolengui has not understood Dr. Black, or Dr. Johnson, but I cannot think that either of them are as radical in their practice as their writings would seem to indicate.

In regard to the treatment of approximal surfaces the subject is too large to discuss tonight; but in regard to the treatment of gingival borders, which seems to be the chief topic of discussion, I have something to say.

Treatment of Gingival Cavity Margins.

First, as to the interproximal space. It is not always a space. It is one thing at twelve years of age, and quite another thing at forty-five or fifty. What is known as the interproximal space, at the age of twelve, is entirely filled with gum tissue. There is no space. As age advances, it becomes a space, in other words, the crest of the gum becomes absorbed. Whether it be pathological or physiological, it matters not, there is recession and there is a space.

Most cavities in the incisor teeth, if properly prepared between the fifteenth and twentieth years, would go slightly under the free margin of the gum; but the conditions are entirely changed when we meet with caries upon the approximal surfaces of these teeth at thirty, forty

or fifty years of age. I cannot believe that Dr. Johnson would advocate the cutting of all cavities in approximal surfaces, no matter how small, to a point where the gingival border would lie under the free margin of the gum. If he did I should differ with him as to the wisdom of such a procedure. Everyone who has had years of experience may have filled hundreds of cavities in this locality that did not reach the gum border; and yet those fillings have saved the teeth. I saw eight fillings recently in the incisors and cuspids that I inserted thirty-two years ago, and not one of them has been patched or repaired during that time, and not one of them extended under the gingiva. I saw within ten days some operations upon the approximal surfaces of the incisor teeth—fillings of medium size—that were inserted by Dr. Elisha Townsend, of Philadelphia, fifty-five years ago, when the person was twelve or fifteen years of age. There has been no recurrence of decay, and no man living could make more perfect operations today.

Those of you who have been in practice for a large number of years will bear testimony that these are not exceptional cases, but are to be seen every week, or every day. It is not because of the superior skill of the operators, but because they have discriminated carefully. Every man in daily practice knows—his judgment tells him—when to cut freely and when not to do so.

Bicuspids and Molars.

Again, when we come to the posterior teeth, the question arises, where shall we carry the borders of our fillings? Dr. Black says these borders should be carried buccally and lingually to a point where they are self-cleansing and always above the gum. That term, "self-cleansing," as Dr. Ottolengui has already pointed out, is a misnomer. No surface can cleanse itself. If he had said to a point where the brush would reach and cleanse those borders, nearly all would agree with him because decay often recurs from insufficient extension. The lips and tongue do not cleanse those surfaces, but the brush will, if used properly.

In regard to extending the gingival border under the gum in the bicuspids and molars, I cannot agree with Dr. Johnson, or Dr. Black, that it is essential to do so in all cases. The extent of the decay, the shapes of the teeth, the position of the teeth in the arch should be taken into consideration. I should not deem it wise to cut away the whole approximal surface of a bicuspid or molar because it was defective at a minute point, but if that tooth were poor in quality and decay were progressing rapidly, I should view it differently and cut as freely as they have indicated. Just here it seems to me good judgment is essential.

In regard to the gingival border being an insecure one, my observation and experience have taught me that fillings do not more frequently fail at the gingiva than at other points. Take the average incisor which has been well filled upon its approximal surface. Where do you find the recurrence of decay if it has occurred? Is it at the gingiva? No. In nine cases out of ten it is either along the lingual or the labial border at or near the gingiva. If all teeth were poor in quality and if all fillings inserted upon approximal surfaces were sure to be undermined by a recurrence of decay, then I should unhesitatingly recommend cutting all gingival borders beyond the gum line and all buccal and lingual border to an "immune area." I am in hearty accord with both Drs. Black and Johnson in their method of extending buccally and lingually in teeth which have shown a marked tendency to rapid decay, but it seems to me that to do such wholesale cutting before all teeth which may have decayd but slightly is to sacrifice a great deal of tooth structure which our experience has taught us to believe may never become involved in the diseased area. If you will read Dr. Johnson's book carefully, you will observe that he has made some exceptions and says under what circumstances he would not feel justified in cutting so extensively. Experience has shown that small fillings have arrested decay in countless numbers of approximal surfaces for periods varying from ten to fifty years. Is it not therefore better practice to discriminate with great care and cut away only so much enamel and dentine as in our judgment will be sufficient to accomplish permanent operations in the special tooth upon which we are operating?

Extension for Prevention.

By E. K. WEDELSTAEDT, D.D.S., St. Paul, Minn.

There is no personal difference between the essayist and myself. I shall try to confine myself strictly to the argumentative and I beg leave to say that while the ideas which I shall present for your consideration may in the minds of some appear dogmatic they are, however, based on definite knowledge. I do not question that my paper will appear as irrational to the essayist as his does to me.

The essayist has divided his paper into six headings and an introduction. The writer will discuss the essay in this manner, commencing with the introduction and considering the headings according to their arrangement by the essayist.

The contents of the opening paragraph in the introduction should never have been written. The teachings of Varney and Webb were not accepted by their contemporaries, else we should not later have seen in the "American Text-book of Operative Dentistry" (1897) such sayings as these: "If the walls of the tooth are frail, the cement will serve to greatly strengthen them." (See page 264, 15th line.) And again: "In preparing the cavity for a filling of this kind, almost no tooth substance has to be cut away simply to get access to the cavity, to properly start and pack the filling, as is often necessary if an entire gold filling is to be made." (See page 268, first paragraph.) I feel that had the essayist taken one or both of these sayings, or if he had taken some of the sayings in another text-book called "Plastics and Plastic Fillings," and paid his respects to them, he would not only have been doing a good deed to the dental profession but he would have been rendering humanity a lasting service. Instead of this, however, he assails the theories advanced by Dr. Black in 1891, and calls them a "dogma," i. e., "an assertion without regard to evidence or truth." Being seemingly ignorant regarding Dr. Black's teachings he is unconsciously most unfair to this great man and his teachings. I say this in all charity, for the essayist is a man for whom I have much regard, otherwise I should not give up my time in trying to show him the error of his ways and attempting to impress upon him the desirability of "leaving to the men who will come after him a remembrance of him in the good works he has made."

The theories advanced by Dr. Black in 1891 are not only correct teachings to follow, but they are the only ones which scientific men recognize as the fundamental principles on which all successful dentistry must necessarily be based. They are the outcome of years of study and a comparison of clinical results obtained from the operations made by Dr. Black and hundreds of other dentists. When Dr. Black gave the dental profession the results of his experience the men of superior intelligence saw at a glance how worthy they were of their consideration, but the men of ordinary and inferior intelligence could not at that time, nor do they even to this day, accept his teachings any more than some men are willing to accept the results of the researches of Dr. J. Leon Williams regarding the cause of decay.

So much for the introduction. Let us now turn to what the essayist has seen fit to designate as "Dr. Black's dogma." In the words of my friend, Dr. B. Holly Smith, I will say, "I am in harmony and accord," with what the essayist has quoted under this heading as the teachings of Dr. Black. The trouble with the essayist is he does not seem to realize that there is a difference in fillings; that fillings are divided into

temporary and permanent. Did he know the difference between temporary and permanent work he would have said nothing about "Dr. Black's dogma." Not recognizing these differences he has necessarily but one standard for all his operations. It is an absolute impossibility for us to place all fillings in one class, just as much so as it is for a physician to treat the same disease for all people in but one way; yet the essayist leads us to believe that he does this very thing. How he can possibly take a child of twelve and treat it as he does a man of forty passes my comprehension. That men in our profession do these things is a well-known fact, but the less said about them and their methods the better for all concerned. A little later in the paper this matter of extension for prevention will be considered in a different manner.

I do not desire to go out of my sphere and pick up cudgels for Dr. Johnson, especially when there is no necessity for it, so let Dr. Johnson answer for himself.

Inapplicability of Dr. Black's Dogma.

After reading what is under this heading several times I am very greatly surprised at the essayist's views. Dr. Black, his disciples and those versed in the Black methods use some judgment in the preparation of cavities, and it is their aim at all times to do just one thing, and one only in the preparation of cavities, and that is to leave no opportunity for the undoing of the work which they have made for any of their patients. They do as Dr. J. Leon Williams says: "Remove the cause which led to the first decay of the tooth," and they try to leave no "opportunity" for the bacteria to again attach themselves and thus undo the work which they have so carefully made. If this "opportunity" is left we have the cause *in situ* which led to the first decay and it makes no difference if the essayist or I fill that cavity, recurrence of decay is bound to take place. I am simply amazed at the ideas of the essayist, for they are at such utter variance with the later teachings.

I wish those interested would read with some care the second paragraph under this heading. It is a self-evident fact on the face of it that the essayist is an engine instrumentator and knows absolutely nothing about scientific cavity preparation, according to the Black methods. The use of tools is entirely unknown to him; therefore he has little right to draw any such picture as he has seen fit to portray for our inspection. Three or four cuts of a chisel will more often than not place the margins of those cavities on the proximal surfaces of teeth into territories that are absolutely self-cleansing and three or four cuts with a large Wedelstaedt obtuse hoe will so extend the cavity at the gingival margin that

when the filling is completed it will be covered with a healthy gum septum.

According to the Black method, cavities are so prepared that they are simplicity itself. So simple are they prepared that I have on many an occasion seen a patient sit down in Dr. Black's chair at 10 o'clock and leave it at 11.30, and what was accomplished in those ninety minutes? A large mesio-occlusal cavity in a lower or upper molar would be prepared, filled and the filling contoured properly and polished. I have repeatedly made similar operations in the same length of time. This fact can be attested by dozen of men in this Northwest who have attended the clinics of the G. V. Black Dental Club of St. Paul.

The essayist wrongs the members of the dental profession when he says that work of this kind tends to lengthen our operations. On the contrary, it tends to shorten them most materially. In my own work I can say that once I took four and five hours to do work that I more often than not make at present in seventy, eighty or ninety minutes.

The essayist has seen fit to refer to compensation. In answer let me say I am compensated for my work by the length of time spent in doing it. I am very certain that it takes a longer time to fill "small' or "medium" cavities in bicuspids or molars according to the old methods in vogue than it does to fill large cavities by the present methods.

The essayist has never heard of nor used the Black saw, much less the Black finishing files and trimmers. When he does not know about the usefulness of these instruments, how is he in a position to speak about the finishing and polishing of fillings? He speaks from his own point of view, which I regret to say is about forty years behind the times. It is much easier to trim the gingival margin than any other place, for the reason that at one effort the overplus can be entirely removed, provided a man knows his business and the latest methods of finishing fillings at the gingival margin.

It is not often that I have the first chance at filling a given cavity. Patients come to me from other dentists, and in looking over their teeth it is seldom that I do not point out to them the condition of their teeth. It is generally the same old story: "I have been a patient of Dr. Goldtooth or Dr. Silvertooth for nine or ten years and my teeth are very soft; so soft, in fact, that fillings will not stay in them. All these teeth have been filled time and again and the fillings always fall out. Now I come to you. Can you save my teeth? If you can I will pay you anything you ask."

Look over a mouth of this kind and it tells its own story. In no case has the cause which led to the first decay been removed. On the

contrary, it seems to me in the majority of cases that the previous operator purposely made the fillings so the teeth would decay in the shortest possible time. All the fillings were so made as to invite disease and not to invite immunity. I will cheerfully send to the members of your society the names of a few persons who will gladly testify to the kind of dentistry which they wish made and the kind of fillings also. In every case they will answer, "Extend well the margins, for I have had enough of the old way."

In the third paragraph under this heading the essayist asks what reply the advocate, of extension for prevention can make to his questions. Here is mine: If the cause which led to the first decay has been fully removed and no opportunity left for the micro-organisms to attach themselves again, then I can assure you that recurrence of decay will not take place around that margin in a hundred years. That is my reply, and it has for a foundation the observation of work made upwards of thirty years ago by many men who were ignorant of the theory of extension for prevention. The cavities with which they dealt, however, were so large that their margins were in self-cleansing territories. Being in these territories they were necessarily kept clean by the action of the tongue, the excursions of the food and the use of the tooth brush.

And now let us turn to the fourth paragraph under this heading. I have read and reread this paragraph, and the more I read it the more satisfied I am with the knowledge that the essayist "says what he says and does what he does according to his ability." But his ability is that of 1880 and not that of 1901. This may not be an argument, but it is nevertheless a fact, for he shows by his sayings that he is wholly unfamiliar with any of the later methods of finishing fillings. In no profession is there a hard and fast law which governs every case. The conditions involved in one case are more often than not wholly dissimilar in the one next met with, and if a man has no judgment he is unable to differentiate between the two cases. The advocates of extension for prevention have no set rules beyond the fact that when permanent work is to be made, the cause which led to the first decay must be fully removed and no opportunities left for the undoing of our work, and your essayist, nor I, nor any other man, be he as skilled as Dr. Black himself, can leave an opportunity and not find his work undone. I am appalled at this fourth paragraph, for it is at such utter variance with the facts to which I shall now call your attention.

In 1894 and 1895 Dr. Black repeatedly talked to me about the necessity of properly trimming fillings. This led to my studying this particular phase of the matter with a good deal more care than I ordinarily

would have used. I examined the gingival margins of one hundred proximal fillings which I found in the teeth of those who consulted me. In only five cases out of the hundred were the fillings flush with the margins. In ninety-five cases there were overhanging margins of filling material which in a number of cases amounted to over 3.5 millimeters in thickness. I began examining gold crowns, and out of one hundred crowns so examined found just one under which I could not send my exploring point. Some of these crowns were so large that the edges of the bands at the gingival margin extended full three millimeters from the tooth itself. I do not wish to be understood as saying that overplus filling materials or bands are good things, but I do say that as long as these are not irritants the only harm I know of their producing is to keep the mouth in an unhygienic condition, invite disease and be a menace to the stability of the rest of the teeth. But in so far as ever finding any cavity of decay beyond such margins—well, this I have never seen.

I really do not know what to say about what the essayist says of the differences he has to contend with in finishing mesial and distal fillings. He asserts that a distal filling is so very difficult to finish at the gingival margin. All distal fillings are far easier to finish than are the mesial fillings, provided the Black methods are employed.

I do not view with distress or anything akin to it the cavities which extend under the gum. They do not trouble me any more than those which do not extend so far.

Impracticability of Dr. Black's Dogma.

My amazement grows as I read farther. The essayist says that he combats the teachings from the standpoint of the general public. It is unwise because its successful application must rely upon a degree of skill which is above the average dentist. Once more, in my estimation, is your essayist wholly wrong. It does not require one-quarter of the skill to prepare and fill cavities according to the methods of 1897 as it does to prepare and fill them according to the methods in vogue in 1879, for the reason that through the use of the Black methods a cavity is reduced to one of greatest simplicity. Whereas neither the essayist, your writer, nor any other man can follow the teachings of 1879 and do the work which the Blackites are doing this day. Any man of even ordinary intelligence can readily pick up the methods of Dr. Black if he is willing to give them that attention that they deserve and study them as they should be studied. In so far as the practical application of the Black methods to cavities is concerned, it gives every promise of

advantage, and it is only through the gingival extension of the cavity margin beneath the gum septum that security is given to a filling. The essayist asks from a practical standpoint, what is exacted by this cavity preparation? The chief point of difference, he leads us to believe, between the old and the new is that "the operator must have skill to make the extension, judgment to know how far not to go, ability to fill against this margin," etc. The chief difference between the old and the new is not what your essayist has seen fit to call attention to, but consists mainly in the simplification of the cavity preparation, which does away with the large and deep undercuts in the lingual and buccal walls which so many were taught to make and which so many are still being taught to make. It is absolutely impossible for any man to fill these with the same degree of thoroughness that the work in other parts of the cavity receives. These undercuts are simply a detriment to a filling and not one man in ten thousand can so fill them that they do not leak, thus creating an opportunity for the undoing of the work. In so far as filling these simple cavities is concerned, I have merely to say that it is far easier to fill them and that the work can be much more rapidly and thoroughly made than by adhering to the old methods.

I do not know what the essayist refers to when he speaks of the atrophy of the gum septums and the causes that lead to this state of affairs. Gum septums are shortened by the careless use of toothpicks and floss silk, no contacts on fillings, faulty contacts, permanent separations between teeth or fillings, non-contour of the interproximate space, the mesio-distal wear of the teeth, etc., these are some of the causes and we are all acquainted with them. I know nothing of having the gum septums shortened by placing the filling material a trifle under it, and a careful inquiry among men who are following this method bears out the belief that it has no foundation.

Causes of Recurrence of Decay.

I am unwilling to discuss the first three paragraphs and will turn my attention to the fourth paragraph in which the essayist says that decay at the gingival margin is mainly due to unskilled workmanship. The essayist believes that decay is more liable to take place in the proximal surfaces of two unfilled teeth in contact than between the fellow teeth on the opposite side of the mouth where both the teeth have been filled perfectly, even though the fillings be "small." This is not my clinical experience. Out of sheer curiosity I went into my laboratory and took down a box which contained filled extracted teeth (for a number of years I have been collecting teeth of this kind and many of my friends from the Atlantic to the Pacific have cheerfully contributed

to this collection). I counted out one hundred of these filled teeth, whose proximal surfaces contained fillings. I did not stop to examine them while counting them out, but was satisfied if there was a filling in the proximal surface. I noticed after I had gotten one hundred that there were centrals, laterals, cuspids, bicuspids and molars, from the upper as well as the lower jaw. The teeth were then examined and that with much care, and I ask of you gentlemen a careful consideration of the results of this examination.

Whole number of teeth containing fillings	100
Number containing amalgam fillings	80
Number containing gold fillings	20
Number containing cavities of decay at the gingival margin, due to non-extension of cavity margin for the prevention of the recurrence of the decay	85
Number not showing any evidence of decay	15

(I think it is about time to reconstruct some of our text-books.) Here we have eighty-five out of one hundred filled teeth with cavities of decay at the gingival margin. Can it be possible that eighty-five out of one hundred operators are so unskilled that they do not know how to make perfect fillings? It is very likely that one hundred different operators filled these one hundred cavities. The results of this examination corresponds very closely to my other records and the results of the other records are that eighty out of every one hundred fillings which I remove are on account of cavities of decay at the gingival margin due wholly to non-extension for prevention. I am somewhat acquainted with the methods of some of the previous operators who have made many of the fillings which I have removed and I do not believe that they are "unskilled."

And right here, while on this subject of unskilled workmanship, I wish to say and I say it in all charity, that if the essayist had written an essay for the consideration of the members of the dental profession, calling attention to some of this unskilled workmanship and had pointed out to us wherein the fault lay, he would have rendered the profession a great and lasting service. For I do not believe that anything is ever gained by attempting to cast a doubt on a scientific theory which for ten years has been tried and not found wanting, more especially when the writer of such an essay is not a believer in the theory, is not familiar with its practical application, and knows absolutely nothing about the methods of those who are successfully applying the same in their every-day practice.

The essayist is quite right when he says that where one proximal surface is filled it is but a question of time before the proximal surface of the adjoining tooth decays; that more often than not takes place and does so for a number of reasons. Very often the adjoining surface is injured in a mechanical way, the enamel is injured by the carelessness of the operator, non-contouring of the interproximate space, too large contacts, no contacts at all, are all causes which assist in causing the adjoining surface to decay. Where, however, the interproximate space is properly contoured and a proper contact point made on the filling, this liability to decay is reduced to the minimum and the chances for decay taking place in the adjoining tooth are not any greater than in any other part of the mouth.

The seventh paragraph under this heading I will answer by saying that the experience of your essayist and his observation are not my experience and observation and I do not think his views are based on sound logical reasoning.

In answer to the eighth paragraph I will say that I have not observed decay taking place at an earlier period in mal-positioned teeth on one side of the jaw than in the teeth on the opposite side whose positions were normal.

Tenth paragraph: I have, however, observed that filled teeth are more prone to decay than unfilled ones. Full 80 per cent. of the work I make is the removal of and the replacing of poorly made fillings which have failed on account of non-extension for prevention. By following the methods in vogue at the present time recurrence of decay is much more frequent than the success of fillings. In relation to the gingival margin, my experience is diametrically opposed to the ideas presented for your consideration by the essayist, and I will venture to assert that full 96 per cent. of the work I am called upon to replace does not have the gingival margin covered by a gum septum. To illustrate how absolutely necessary it is to have the gingival margins of our fillings covered by a healthy gum septum, I ask of those who are interested in this matter to note how often decay takes place where the edges of gold crowns do not extend under the gum; where the gingival margins of fillings on the labial and buccal surfaces are not so extended, when the edge of the cavity extends to, say, within a millimeter or a millimeter and a half of the free margin of the gum. Why, it is merely a question of time before decay takes place between the edge of the band or filling and the gum. Many thousands of practitioners have noticed this fact.

I have removed many fillings which have been made by men of skill. In some cases these fillings had been in teeth for twenty, thirty

and even forty years. Had there been a practical application of the extension for prevention method, the fillings would have remained in those teeth for all time and no cavities of decay would have been found around their gingival margins. For in many cases the work of these men is still standing in the teeth of these patients for the reason that the other cavities were so large that when the cavities were prepared their margins were in a self-cleansing territory.

In considering this subject it is well for us to remember how few persons take any special care of their teeth. Of late years the necessity of impressing on the mind of the patient the care that he should give his teeth has made itself felt more and more as the years have gone by. A year or so ago a lad of fifteen or sixteen years of age consulted me and I learned that just before he went to church on Sundays he would brush his teeth. I talked to this lad about the care he should give his teeth and started him along the right road, at least this is what I supposed. He came to me for several weeks and each time I saw at a glance that he was neglecting his teeth. I talked to him a number of times regarding the mass of filth which was on his teeth and pointed it out to him. Yet each time he came it was the same story, "I do brush my teeth every night and every morning." One Saturday morning he came in and on looking over his teeth I found them as usual. I did not mince matters with him on this occasion. I told him plainly what I expected and that he must do as I said for his own good. He could not stand it any longer and burst out crying. Amid his sobs, he said, "As true as I live, I got up fifteen minutes earlier this morning, just so I could get the first whack at the tooth brush, but papa and mamma had gotten up first, for papa was going down the road and so had to take an early train. After they had gotten through with the tooth brush it was so soft I could not brush my teeth as I wished." I said no more to that lad at the time, but he has his own tooth brushes now. (This lad's father was for years a wholesale druggist and must surely believe that one nail brush and one tooth brush should answer for the entire household.)

In preparing cavities on the proximal surfaces of teeth, the care and attention given the teeth by the patient must be taken into consideration. The more careless the patient the greater the necessity for placing the margins into territories that can be kept clean by the simplest means possible.

The essayist does not believe that recurrence of decay can take place around "small" fillings placed in the proximal surfaces of teeth, provided perfect work is made. (I beg the essayist's pardon, but I wish he would

have been a little more definite. I do not know nor does anybody else know what he means by "small fillings." It is full time when speaking of the size of cavities or fillings to state the size of the tooth and the size of the cavity. In such a case, all can better understand what is meant. The day has passed when we can use "tiny," "small" or "medium," in so far as these relate to cavities. Intelligent men do not like these terms, for they express nothing and I consider them obsolete.) This then naturally leads to the consideration of what constitutes "perfect work." Perfect work in his mind is work with which he cannot find fault. Now each has his own ideas of what is ideal. What the essayist might think constituted perfect work would very likely be considered something else by another. To illustrate this a little more, I will say, I know a dentist who says, "I am an expert operator, make operative dentistry a specialty and no man does better work than I." In the '80s this young man took a course of lectures and graduated from a certain dental school. His instruction in operative dentistry was in the methods in vogue from '65 to '75 and today this young man is adhering very strictly to the methods that he originally learned. He is perfectly satisfied with this knowledge, has never advanced a single step beyond what he learned and to this day he believes that he is making the highest grade of work that can be made. He does not believe in the practical application of the extension for prevention theory nor does he believe in contouring fillings which he makes in cavities on the proximal surfaces of teeth. His ideal filling is of the standard of 1875. Recently one of the families who had been under his care for six or eight years, journeyed to a distant part of this country and there spent the winter. While there it was necessary to consult a dentist. The lady did not like the idea of consulting a strange man but it was necessary to go, and go she did. The dentist made a hasty examination of her teeth and said, "You surely must have had those teeth filled by a butcher, for never in my life have I seen such poor work." Now let us look at this for a moment. We have: First, the opinion of the man who originally made the work. He alleges that the work is ideal and the best that can be made and, second, the opinion of a man with the ideal of 1900 before him who asserts that the man who originally made that work is a "butcher." Who is right? On this score we are instantly divided, for all the men in our profession who are still working under the 1875 standard will pass this work and say that it is ideal; while those with the 1900 ideas will condemn it and that in most unqualified terms. It is simply a question of what year we are dealing with. The ideals of 1875, 1885 or 1895 are not the ideals of 1900. And when perfect work is spoken of, the year with which we are dealing must necessarily be taken into con-

sideration. We must remember that in 1891 there was a very decided change in our methods, that in 1897 these methods were again advanced. This was on account of our speculations regarding the cause of decay being set at nought and the real cause set before us in a theory which was accepted by many. The results of Dr. Williams's researches made it necessary to again and again advance our methods, until now it does not seem possible to advance them any farther. It is very true, the latest advanced methods have been kept under cover, for it is useless to attempt to interest the profession in them, when the great majority of our men and teachers are still following the methods in vogue in the '70s and '80s. Where so many are unwilling to accept the teachings of 1891, why attempt to interest them in the later teachings? The essayist is not willing to accept the teachings of 1891. On the contrary, he assails them. He is thus stumbling along in the dark in regard to what the men who have accepted these teachings, know as faultless work. His faultless work could readily be ideal in his mind, but it would appear as something else to those who are following the standard that has 1901 emblazoned on both its sides.

Since the arrival of the essayist's paper, I have seen no less than one hundred patients for whom it will be necessary to replace a large number of fillings that have cavities of decay around fillings which were placed in the proximal surfaces of their teeth and all these cavities of decay have been caused by opportunities which were left by the previous operator. In not one case was there a practical application of the extension for prevention theory.

I will close this long argument by calling your attention to the case of a young lady who consulted me last December and you can draw your own conclusions. While busily at work in the early part of December, I was called to the telephone and a young lady asked for an appointment for the purpose of having her teeth examined. The young lady came at the appointed time and on looking over her teeth, I found some thirty-eight gold fillings had been made in the proximal surfaces of her teeth. The cavity preparation was that in vogue in 1875. A cursory examination with the mouth mirror surprised me, as the work was so beautifully finished. I picked up an explorer and found cavities of decay beside the fillings in the proximal surfaces of the molars, bicuspids and incisors. I said to the young lady, "This work is very beautiful but there are a number of cavities of decay which are so large that a dozen or more of these fillings must be removed and be replaced by fillings of a somewhat different character." She looked at me in a very peculiar way and said, "It is a very astonishing thing that you tell me this, for I have had no less than ten different dentists examine my teeth and all have assured me

that this work is the most beautiful that they ever saw and that my teeth are in perfect condition. Why, I just came from another dentist who, after examining this work, assured me that he had never seen such beautiful fillings in his life and that my teeth were in perfect condition." Here was a state of affairs, but the same thing having happened before, I was prepared for it. Picking up a separator I obtained space between the upper right first molar and second bicuspid and the young lady's attention was called to the condition of the gingival margins. There was a cavity of decay in the molar extending from the bucco-gingival angle clear across the entire gingival margin and including part of the linguo-gingival angle. The bicuspid had two distinct cavities of decay in it; one at the linguo-gingival angle and the other at the bucco-gingival angle. Out of sheer curiosity, I measured the size of the cavity of decay at the bucco-gingival angle and it was 2.1 millimeters gingivo-occlusally by 1.7 linguo-buccally. After the patient had examined these cavities, she was perfectly satisfied regarding what I told her about the condition of her teeth. Now, before I go into detail regarding this case, I wish to say that the fillings made for this young lady were about as perfect as any of the kind could be. The previous operator was a man of skill and a man well informed regarding the methods in vogue many years ago. He does not believe in the new teachings, will not or cannot accept the extension for prevention theory, but he did pack tin or amalgam into the gingival thirds of all the cavities which he filled on the proximal surfaces of molars and bicuspids and here we have the results of his labor. I removed no less than a dozen fillings from the proximal surfaces of this young lady's teeth on account of cavities of decay. Let us take for example this molar that I have just spoken of and consider this filling.

The length of the tooth was 6.325 millimeters; width of the tooth at the gingiva, mesiodistally, 9.05; greatest thickness of the tooth linguo-buccally, 10.9. The size of the filling which I removed from the mesio-occlusal surface on account of the large cavity of decay across the gingival margin was 3.9 millimeters linguo-buccally by 4.3 millimeters gingivo-occlusally, but when I finished preparing that cavity it measured 7 millimeters at the gingiva, linguo-buccally, by 6.3 millimeters, gingivo-occlusally. When the filling was finished, the gingival margin was covered with the gum septum so that for all future time there is no chance for recurrence of decay to take place. And what about the bicuspid? I do not care to worry you, gentlemen, with figures, so I will simply say that the bicuspid measured 9 millimeters linguo-buccally and the proximal filling placed therein by the previous operator measured

2.8 millimeters linguo-buccally. Thus the cavity which had been prepared and filled was less than one-third as broad as the tooth. I have all along contended that where permanent work was to be made, the cavity margins must be extended full two-thirds the thickness of the tooth. If temporary work is being made, as was made for this young lady, then it is merely necessary to make the cavities one-third as broad as the tooth is thick. But it should be remembered when such cavity preparation is made that that work will some day have to be replaced. I could write an entire essay regarding this particular case, could tell you how two or three of the proximal fillings when separated at the occlusal had their proximal portion disappear in the large cavity of decay which was below the filling at the gingiva, but I do not think any further remarks are necessary regarding this case.

The members of the dental profession at the present time are divided into two classes:

First: Those who individualize their work; build their cavities after some definite plan; systematize their work and have some idea regarding what they do; and

Second: Those who fill holes.

It is a simple question and let each answer it for himself: To which class do you belong? I ask that you fully consider this question and also these two closing paragraphs.

First: It is now well understood that filling material without cavity preparation is not a potent factor in saving teeth, but filling material in connection with cavity preparation is the most potent factor and the only one for intelligent men to take into consideration in discussing any theory relating to the care and salvation of the human teeth. This one phase of the subject we shall hear more of in the future than we have heard of it in the past. And, second: It is only through the practical application of the extension for prevention theory that the cause which led to the first decay is removed and when this theory is properly applied and tight margins made, no opportunity is left for the undoing of our work. Scientific men recognize this as one of the fundamental principles and the advance and progress of dentistry depend wholly upon the practical application of this theory. The sooner that this fact is recognized by the members of the dental profession, the better it will be for us, our patients and for humanity.

One of the chief objects of life should be, to be of service to humanity, and in our profession a large field is open for us to render that service. What each man's duty is and how he performs it, is something for him to settle with himself. Personally, I try to treat those whom I

serve the same as I would wish them to treat me were the circumstances reversed. If all would try to follow this rule, there would be no necessity for my writing any such long paper regarding the methods which I teach and follow and which I feel should be followed by all who have the welfare of those whom they serve at heart.

The writer begs to offer an apology for this disconnected answer, for it could only be hastily dictated at different times, when he had a little leisure.

Preparation of Cavities.

By B. HOLLY SMITH, D.D.S., Baltimore, Md.

I am profoundly impressed with some things which the writer of the last paper has said about the essayist of the evening, and I am free to confess that if I had known that those things were true, I should have been slow in accepting the invitation to come on myself! I want to confess, too, that I approach the discussion with some trepidation. I received a few weeks ago a telepathic dispatch from Dr. Ottolengui. I will not repeat the exact words, but it was to the effect that the West was now claiming the credit of having in its domain the premier dental operator of America, and that this would not do; that Marshall Webb and many of his distinguished followers had carried the banner nobly for the East, and now that he is dead, and his influence has passed away somewhat, he (Dr. Ottolengui) thought it only fair that we should enter into some competition with that section of the country, wild and woolly as it is, and see if at least we could not divide the honor.

I notice on the program that I am put down as discussing the question on the negative side, so I suppose the telepathic reply must have implied to the doctor that I would discuss from the negative side. I am really embarrassed—partly because so much has been said, and so much better said than I could say it. I have the highest regard, as my dear friend has said, for these gentlemen from the West. I never think of Dr. Johnson, that Sir Walter Scott's heroic lines do not come to my mind:

> "O, young Lochinvar is come out of the West,
> Thro' all the wide border his steed is the best."

Dr. Johnson has so impressed me, with his earnestness and clearness, and his true and genuine manliness, that I love to hear from him. I hate these discussions, because I am afraid I may be led to say something that may give offense.

As to my friend, Dr. Wedelstaedt, I must confess that I was somewhat pleased with the prospect of meeting him. I like his breezy way, as if you could see the fire in his eye, and see every hair on his chin bristle. I like that Western vim and vigor. He means what he says. He told me some years ago, that it would only be a little while before dentistry would be revolutionized: that we in the East did not know much about it. I did not dispute it with him. "I never said him nay." It is useless to contradict one who is an idealist, an extremist.

As for Dr. Black I would not dare raise my voice in arraignment of him. His work stands for what it is. It is well known in the dental profession, and I have no comment to make upon it. Personally he is an attractive man to me. I really think that this whole matter must be looked at in a little different light from what it is looked at by Dr. Black and his followers. I confess to some little disappointment in the essay, that the answer which is to be made and which I have had the courtesy of seeing, from Dr. Johnson, did not measure up as has the recent part of the discussion. There seemed to be a little difference. Dr. Johnson's answer was so polite, you could hardly find the difference between him and Dr. Ottolengui. It seemed to say that Dr. Ottolengui had only misunderstood something that had been said, but on the whole his essay was commendable. That was how it impressed me when I came here. It is a little different now.

Theory versus Practice.

I do not believe that theoretical methods can be taken to represent the *summum bonum* of what is essential, as compared with clinical methods. Really, it seems to me that what we who have been thinking and reading and studying from our text books and journals—working not only in our offices, but in our laboratories—what we observe and see must be given some credit. I was profoundly impressed with what Dr. Darby said about fillings forty or fifty years old. I live in the city which was the home of dentistry, where dentistry began, and I have had rare opportunities for seeing work done by the pioneers of dentistry, by Chapin A. Harris, by Dr. Maynard and by that man who still lives and still fills teeth occasionally, Dr. Cockerill, of Washington.

I see those fillings thirty, forty and fifty years old. I know what they look like and what they have been doing for all that time, and I cannot say that any man would be less than a vandal who displaced

them and attempted to replace them on any so-called new scientific lines.

There are many deductions made by scientific men which are not borne out in practical experience. Really it seems to me sometimes that a man who follows theory, is somewhat in the position of the old Quaker who, having a neighbor who was ungodly, had determined that he would go to see him and talk to him about his waywardness. So when Sunday morning came, he did so, but the man was not at home. Next morning he met him at the market and said: "Neighbor, God put it into my heart to go to see thee yesterday and talk to thee about thy waywardness; but thee was not at home and therefore I desire to say something to thee now about thy sinfulness in using profane language." "Did God tell you to come there yesterday?" asked the neighbor. "Yes," the Quaker answered. "He put it into my heart." "Well," he said, "God made a fool of you, because He knew I was going fishing yesterday."

Do these men really have the knowledge and inspiration, and have they made clinical observations to warrant some of their statements? Dr. Black has stated, and I use this as an instance of a mistake, that non-cohesive gold is not serviceable for fillings on the occlusal surface.

I had the pleasure of eating a little terrapin and canvas-back duck a few days ago with a gentleman from another city, who made a wager that non-cohesive gold could not be condensed to any condition approximating the density of cohesive gold. The non-cohesive gold filling was introduced, and its specific gravity measured up to within nine or ten points—I do not remember exactly, but to a very near approach of the rolled gold. I did not see the non-cohesive gold rolled out, but I have seen some that could be rolled out with a roller so as to make a perfect piece of gold plate. So I say the statement is wrong, and although the man who made it has his finely tested instruments and machinery, he did not know what it was possible to do with non-cohesive gold. He certainly was misled, if he meant that non-cohesive gold as it can be introduced into a tooth, will not resist the stress of mastication.

As to the point at issue, it seems to be more at issue than I thought it possible to be. Would it not simplify matters to return to first principles and recall one of the well-known axioms of surgery that sound tissue must not be sacrificed without great necessity? With this plain rule in view it is easy to see that the burden of proof must rest with the gentlemen on the affirmative side, and in the cavity preparation the rule points as does my clinical experience to the expediency of doing

what is said on the program, and that is simply to cut the cavity to sound dentine.

When the war between the States broke out, it was only thought by those in authority that it would be a small affair. The men in the War Department thought it desirable, as in other countries, that our honor should be upheld by men who compared favorably with other soldiers. They discussed for a long time as to what should be the height and weight of those men, how far they could step, etc., and finally they went to Mr. Lincoln and asked him what he thought about it. They asked: "What do you think should be the height of a soldier, and how long should his legs be?" Mr. Lincoln said really he had not considered that at all, but there was one thing that he should consider necessary, and that was, that every soldier's legs should be long enough to reach the ground.

And that is pretty nearly the position I take in the preparation of a cavity. Every cavity should be cut until we get solid structures upon which to build. Failure may result, and does sometimes result. Dr. J. Leon Williams has shown that caries which was not seen by the naked eye, but had penetrated the dental pulp, was of rare occurrence, otherwise he would not have shown it to us. If that should occur to us, we can fill the tooth again.

I do not think I will go further into the discussion than I have done. Something has happened to me since I have been here in New York, and by the way something nearly always happens to me when I come to New York. Whether it was the result of the rhythm and cadence of the essayist's voice, or a troubled condition of my mind in trying to think over this question under dispute—whatever it was, while Dr. Ottolengui was reading his paper, I passed away from the present scene, and thought I approached a place where dentists go to rest; by a gate prepared and reserved only for dentists; and as I approached, I saw the heroic figure of Dr. Black. His beard was white as snow, and by his side I saw our distinguished Western friend, Dr. Wedelstaedt. Dr. Black held in his hand a pair of scales. Over his arms and across his chest were the signs of the zodiac figures. Dr. Wedelstaedt held a portion of the scales. A page clothed in bright raiment moved about, and I thought I recognized in his face some traces of the feature of my friend, Dr. Weeks. A voice like the voice of many waters stated that I should be tested before I could enter. As I drew near, I asked where was Dr. Johnson, and they said, "Inside, talking to the angels." What a sweet occupation! I bethought me of the non-cohesive gold filling that I had made and had brought along, and I passed it up and waited. Wedelstaedt millimetered

it, and they passed it through the various machinery that stood about, very expensive and very delicate. I thought I heard a voice say: "How strange! how strange!" and some of them said: "A new marvel, that anything that has been so soft, could be made so hard!" and I was allowed to go in on my non-cohesive gold filling.

But as I entered the door, I thought I heard some noise, and my friend here was reading a paper on the other side. Since I have returned to consciousness I have come to believe there is no special door for the dentists to enter this place of rest, and if there is, I do not believe there will be any Western man standing at the door. I think it will be a man from New York, and I would not be surprised if it should be the heroic form and the bright and smiling face of my friend right here before me—Dr. S G. Perry—and from his lips will come the words with which Whitcomb Riley closes his homely poem "Out to Old Aunt Mary's":

"Tell the boys to come!"

Extension for Prevention.

By G. V. Black, M.D., D.D.S., Sc.D., LL.D., Chicago.

Dr. Ottolengui kindly sent me his paper and asked me to prepare a discussion of it. At the time I thought to do so, but being very busy it was neglected until another letter from the Doctor reminded me that the time was growing very short, so that what I write will have to be done very hurriedly.

I have reviewed my papers written for the *Dental Cosmos* in 1891, to which he refers. This review leaves the impression on my mind that considering the time at which those papers were written, I should not now wish to change the thought contained, nor the directions given in regard to the preparation of cavities, though a few points in nomenclature need revision. These papers themselves might well stand as a discussion of the paper presented. In the years that have elapsed since the papers were written and with the experiences gained I find myself expressing the thought in stronger terms, and with more profound conviction of its correctness as applied to practical operations in the mouth.

Also the developments that have since been made in the study of dental caries, its methods of attack, areas of the surfaces of the teeth liable to attack, modes of progress and destructive effects, all seem to me to confirm these methods of operating as best calculated to limit the evil results, and in the highest degree to preserve the teeth in their usefulness.

It does not seem to me that the plea holds good that I cut cavities in the anterior teeth that are unnecessarily unsightly. Of course in the exigencies of dental practice cases present in which abominably prominent fillings are necessary to the preservation of the usefulness of the teeth. But this, as the rule, is because of the burrowing of neglected decay. Ordinarily, proximate cavities are not cut so far out into the labial embrasures as to become especially unsightly by the methods of extension for prevention. The greatest point of difference in cutting into these labial embrasures is, that the line of the cavity margin should run straight to and beneath the gum septum instead of rounding away toward the central area of the proximate surface at the gingival, as they were formerly prepared. This occurs from the extension of the labio-gingival and linguo-gingival angles of the cavity to include these points of liability to the recurrence of decay, and to strengthen the filling by flattening the gingival wall labio-lingually and forming definite angles.

In bicuspid cavities the same rule holds. The proper use of extension for prevention does not make bad looking fillings except as the necessity is created by the burrowing of neglected caries. Some exceptions occur certainly, and especially cases of young people in whom the intensity of the susceptibility to decay is so great that whitened lines of corroded enamel extend near the gum margin fully out to the angle of the tooth. In these I regard it as imperative that the extension be sufficient to include the area of incipient caries even if it should seriously mar the appearance of the tooth.

Correction of Nomenclature.

In some cases the nomenclature employed in my papers of 1891 might be misleading, and this seems to be true in one of the quotations given. There have been more radical changes in the use of words in dental nomenclature within the last ten years than some seem to suppose. These have seemed to follow the studies of this subject presented by me to the World's Columbian Congress in 1893, much of which has quietly dropped into general use rendering our use of words much more explicit than before. For these reasons the quotation which is given from the first paragraph on page 99, *Cosmos* of 1891, would have been better understood if the whole paragraph had been quoted, as it serves to explain the meaning intended. In the previous paragraphs I had been discussing the removal of angles of the bicuspids because of

extensive decay and esthetic objections; and, breaking away give this rule for the formation of the more ordinary cavities; only two sentences of which are given in the quotation. I give the paragraph with explanations in brackets.

"In any case the cutting toward the angle (of the tooth) should be sufficient to place the line of the enamel margin well to the buccal of the proximate contact so that it will be self-cleansing. At the mesio-lingual angle esthetic considerations have no place, and the cutting should carry the line of the enamel margin so far from near approach to the neighboring tooth as to render it safe from lodgments. Upon both buccal and lingual angles (I should now write this: at both the bucco-gingival and linguo-gingival angles of the cavity) the line of the enamel margins should run directly to the free margin of the gum, and should join the gingival enamel margin by a short curve, all of the gingival enamel margin should be covered by the gingival gum septum." The difficulty with the sentence quoted by the essayist is with the words, "Upon both buccal and lingual angles," which may readily be taken to refer to the angles of the tooth instead of to the angles of the cavity as intended when the sentence was written. From this it will be seen that this extension is principally that which will straighten the buccal and lingual marginal lines of the cavity and also the gingival marginal line cutting out the bucco-gingival and linguo-gingival angles and including in this way the area of liability in which recurrence of decay is observed to be so very frequent.

That I cut cavities broader and larger than formerly is certainly true and clinical observation not only justifies the procedure but demands it. But in doing this æsthetic considerations may be sufficiently conserved.

Apparent Misuse of Illustrations.

Having said this much it seems necessary to refer to some things that seem not to have been correctly represented in the paper and in the selection of the illustrations. Figure 2 in the paper presented seems to have been redrawn from my figure 22 (page 348, *Cosmos* 1891), which is intended to represent the first penetration of the enamel in the proximate surface of an incisor, and the smallest proximate cavity. Over against this is placed an illustration taken from my figure 27 (page 351, *Cosmos* 1891), which is an illustration of what should be done, not in case of this smallest cavity, but in case of a very considerable cavity that had previously been filled but has failed from recurrence of decay at the mesio labial and mesio-lingual angles, and represents the extreme of extension. But even in this case the filling is not extended onto the labial surface of the tooth

and is not an unsightly filling. Really a great many neglected cavities must be made to show much more gold in the front of the mouth if the cavity be so prepared as to render the filling safe, for the reason that the burrowing of decay beneath the enamel has destroyed its strength.

Again figure 1 is made apparently to represent the usual preparation of proximate cavities in the bicuspid teeth. It is taken from my figure 19 (page 98, *Cosmos* of 1891), which represents a case in which the angle of the tooth was cut away because of the burrowing of decay under the enamel and leaving it unsupported and further the mesio-buccal triangular developmental groove running over the buccal marginal ridge was stated to have been found weak and imperfect, necessitating the removal of the entire angle of the tooth back to or beyond the groove. All of this is clearly stated in the text accompanying the figure in the *Cosmos*, the æsthetic objections discussed at some length and the conditions requiring this sacrifice pointed out. Thus far the essayist seems to have fallen into error in the representation of my papers and has made it appear that small cavities are unnecessarily extended. As a fact, I have not recommended cutting away teeth to any such extent except in cases where the burrowing of neglected decay has removed the supporting dentine and weakened the enamel, and this together with imperfect closure of developmental grooves have rendered them especially unsafe. I must therefore reaffirm my former statements and emphasize the procedures as correct, judicious and necessary to the highest and best conservation of the usefulness of the teeth.

One of the great difficulties in arriving at correct methods of operating has been the very imperfect study given to dental anatomy, to caries of the teeth, the areas of tooth surface liable to attack and the nomenclature by which these subjects may be clearly expressed. Because of this neglect of close study many members of the profession fail to grasp the relationships of these subjects. Great improvement in exact statement in writing is needed by the best of us, and a closer study of exact methods is greatly needed by the members of the profession generally.

The Gingival Cavity Margin.

If I turn now to the point which has been made the principal issue in the paper, namely, the necessity for laying the gingival enamel margin under the free margin of the gum in the preparation of cavities, I only wish to express my astonishment that this proposition, as constituting the general rule of practice, should be assailed by any one. But as Dr. Johnson has kindly shown me his discussion of the paper since forwarding a copy, and as I observe that he has laid stress on that point, I need not discuss it. While Dr. Johnson and myself might differ

somewhat as to details of procedure in these cases I do not think there is much difference in our understanding of the principles governing the necessity for it. Of course, there are exceptional cases in which this rule should not apply, but these are not frequent and are generally plainly marked.

Some cases occur in which the appearances presented, together with the family history, marks very certainly the coming of complete immunity to decay in which extension for the prevention of recurrence of decay may be moderated; but even in these, if the case be one of ordinary conformation of the parts, the gingival enamel margin should certainly be well covered by the gum margin when the case is completed. Even if this be not held as important, the proper preparation of the cavity in the physical sense would generally make it so.

Just a word now as to the filling of large cavities which are claimed to overtax both operator and patient. It is granted that the extensions make somewhat larger cavities generally. More gold is required to fill them and this fact has seemed to deter some operators. But when they have dropped into the precedures by which this is accomplished they are inclined to laugh at their former terror, for it is found that with the improved form of cavity, ease of approach, and greater convenience and certainty of the whole procedure, the time of the operation is not materially increased, nor is the endurance of the patient placed under a much greater tax. In neither of these directions are the increased difficulties at all comarable with the increased excellence. In saying this I wish it distinctly understood that exceptional cases come into our hands in which conditions are such that the full preparation of cavities would be a hardship to the patient not to be endured rightfully at the time when they present, and in which such measures as will bring about better conditions must be instituted before permanent fillings are made.

When the papers of 1891 were written the discussion of immunity to caries and the coming of immunity with advance of age had not come under discussion by the profession, and for that reason it was not so distinctly recognized in those papers as it would be in a similar consideration of the subject now.

Extension for Prevention.

By Dr. Wm. H. Trueman, Philadelphia, Pa.

In this progressive age, notwithstanding the marvellous advance our profession has made in all its departments, in the effort to keep step with the procession, we now and again find ourselves upon very familiar ground. It is so to-night. Early in August, 1878, I had the pleasure of reading a paper before the Pennsylvania State Dental Society, entitled "Why Do Fillings Fail?"* More than a score of fruitful years have passed, and the question is still before us. This large and attentive audience is evidence of the keen interest it still commands. While we have, or think we have, a better understanding of the destructive agencies which we combat, and of the beginning and progress of dental caries, and undoubtedly have advanced in technics, and are better provided with tools and appliances, we are not as yet masters of the situation, but are compelled to now and again exclaim: "Why do fillings fail?"

Twenty or more years ago we were discussing the electro-chemical theories of the "New Departure," and I have brought with me a number of exhibits that accompanied the paper to which I have referred, that are still of interest, some are, indeed, as appropriate to the present phase of the subject as though especially prepared for it. The gum margin or cervical border is still the recognized weak point. The theory of "microbic plaques" has replaced the mysterious electro-chemical theory, and is more in line with modern theories of tooth destruction; it is none the less mysterious. The new theory equally with the old fails to explain why the agencies involved are at times harmless and at other times so destructive, why they are so energetic in undermining some fillings while others equally exposed and equally inviting injury escape.

The wording of the question before us has special reference to cavity preparation. The opening paragraph of Dr. Ottolengui's paper naturally recalls the many changes suggested in this important operation during the last half century. These changes have been suggested

*_Dental Cosmos_, Vol. XX., November and December, 1878, pages 591 and 657.

from time to time as the result of a presumed better understanding of the real cause of tooth decay, improvements in tools and materials, and a general advance in dental technics. They indicate a desirable restlessness in the profession. We have done so well that we have come to look upon failure as a disgrace, and to designate a filling that does not remain in place and arrest decay as in some way faulty. We are concerned to know whether the fault is in the design or the workmanship. We are concerned to-night with the planning of the cavity, its outline at the much dreaded cervical border, not, however, as in the past to gain access and lessen the danger owing to its treacherous tissue, for these have been laid aside by the advocates of extension for prevention; they have become, indeed, as our profession has advanced in means to combat them, far less important than they once were.

The Theory of Extension For Prevention.

The advocates of extension for prevention have accepted the latest suggestions of laboratory experiments regarding the initial cause of dental caries, and contend that in the light of this, maintained cleanliness of the cavity margin must be added to other accepted requirements.

If I understand the position, they have accepted the modern pathological definition of cleanliness, and regard cleanliness in this connection as being something more than the mere absence of ordinary uncleanness. They have accepted the latest suggestions of laboratory research that the real danger at this point is more than treacherous tissue, and less under control than is defective workmanship. While admitting that perfect cleanliness, cleanliness in its most exacting sense, inhibits dental caries, primal or recurring, they contend that this exacting cleanliness in some positions, positions upon which the marginal lines of many approximal cavities encroach, cannot be maintained. They therefore insist that the marginal lines should be placed beyond this doubtful territory; they insist that cavities should be so extended that the filling presents throughout this entire territory a smooth, highly polished surface of gold, replacing with gold the more vulnerable tooth tissue, and advise extensive sacrifice of sound tooth tissue if needful to attain this end.

This position, if the premises upon which it is based are true, is unassailable. Whether the extension for prevention is much or little is beside the question. If, as the question asserts, the future safety of carious teeth demands that the gingival margin in approximal cavities should be extended so as to lie under the gingival gum septa, and should also be farther extended sidewise, as the advocates of this idea strongly

contend, until a position is reached unfavorable to the undisturbed lodgment of deleterious matter, anything short of this and more than the removal of carious and uncertain tissue and such sound tissue as may be necessary to make the cavity accessible and retentive in shape, is a useless waste. Extension for prevention, if necessary, should be thoroughly done. If it is unnecessary, the needless removal of ever so small a portion of sound tooth tissue is indefensible. If it is a question of necessity it cannot be, as Dr. Johnson suggests, a matter of judgment, unless, indeed, the judgment is exercised as to whether it is best to extend the cavity or to loose the tooth. I fully agree with him, if the position and size of the cavity is such that its proper preparation requires the removal of tooth tissue extending beneath the gum line, it is of course the right and proper thing to do. I still agree with him when he farther suggests, it would be folly to cut through sound tissue to reach the gum margin in cases of extensive and permanent gum recession. Why it is not also folly to cut through sound tissue where there is an appreciable distance between the margin of the cavity and the gum margin in cases where there has been no extensive gum recession, I am unable to understand. I am impressed that if called for at all it is especially so in cases of marked gum recession, for these enlarged interdental spaces are, undoubtedly, far more prone to uncleanliness.

The question of practicability we can afford to ignore. The question is, "Is it necessary?" If it is necessary, the needful skill and all that is required on the part of the operator the past has abundantly proved our profession can supply. If it is the best, those who want the best, and are willing to pay for the best in patience, endurance and cash, will find in our profession that want fully met. We leave out of the count the typical "nervous" patient, those unfortunates so gingerly put together that they should never have been born, or having been born, should have died before their first teething period. I approach the question, considering those cases only where it is, in its fullest sense, practicable, and narrow it to the one thought, "Is it necessary?" Is it the best thing to do for the salvation of the affected tooth?

The fact that teeth in the same mouth are more liable to decay when not filled than when filled, although the filling may be a small one, I hold has no bearing on this matter. All the teeth in the same mouth are liable to the same incidents and accidents, especially corresponding teeth of the same jaw. They have, very nearly, the same surroundings, and are, therefore, subject to like defects and injuries. While these predisposing and exciting causes are common to all the teeth in the same mouth, they vary potentially. Some teeth predisposed break down early,

some later, and some not at all. If the small filling remedies the defect, the decay is arrested; if it fails to do so, decay will recur.

Time Needed to Test New Methods.

It will require a very much longer time than has yet elapsed since the idea of extension for prevention was first promulgated to determine whether immunity from recurring decay bears a marked relation to the area embraced by the filling or not. As Dr. Ottolengui suggests, not until the practice becomes somewhat general can we estimate its real value, and determine whether or not its success or failure is due to the personality of those who adopt it. We may remember, and perhaps with profit, the advent and the exit of separation for prevention nearly a generation ago. I well remember hearing Dr. Robert Arthur's *exposé* of that idea before the Odontographic Society of Philadelphia, so plausible and forceful that, accompanied as it was by statistics, drawings and models, it carried with it conviction.* The method had been suggested to him by observing the excellent results at times following the use of the file in obliterating superficial cavities and for relief of crowded dentures. As a rule, this practice had proved disastrous and had long been abandoned. Dr. Arthur observed that these excellent results were due to the changed relation of adjacent surfaces facilitating cleanliness, and conceived that with improved appliances and a better understanding of the requirements he could anticipate, and by early making this change prevent the occurrence of decay with far less loss of tooth tissue than was necessary to repair the damage after a visible cavity had formed. He asserted the possibility of determining beforehand with reasonable certainty those positions and such teeth as would eventually need repair, and those where it would not be required.

You may remember how plausible the idea seemed, and how promising were its immediate results. You know, however, how quickly it proved disastrous when the profession at large put it to a crucial test. In the hands of a few who mastered its technics and learned its limitations, it still continues a tooth saving practice.

In common with extension for prevention, it called for the destruction of sound tooth structure; it differed in that it aimed to make the vulnerable surface self-cleansing, while extension for prevention ignores the presence of deleterious matter and seeks to render it inert for harm by replacing the natural and destructable surface against which it rests with one artificial and resistant. If the practice proves as excellent as

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Dental Cosmos, Vol. XXI., July, 1870, page 348.

its advocates promise, will we not soon be called upon, in justice to our patients, to prevent by anticipation? To choose our own time to make this change, and minimize the loss of tooth tissue by confining it to that necessary to admit and retain a veneer, on the area of the surface at risk?

I beg to differ from Dr. Johnson in his concluding remark. I take it, it is the dentist's mission to save teeth, to prolong their usefulness to the utmost in all the varied capacities they serve. It is not derogatory to initiate, encourage or practice methods that simplify, that make easier or more comfortable for patient and operator means to that end. Tooth saving in its broadest sense is our mission; making them better, improving their surroundings, preventing and repairing injuries to which they are subject, and lessening as far as we can the discomfort attending their unavoidable loss. We elevate the profession as we increase its usefulness to the public whom we serve in attaining these ends. To insist that all operations should be, artistically and mechanically, "as perfect as the hand of man can make it," regardless of the fact that but few can so serve or be served, may elevate the profession as a body of artists and artisans, but curtails greatly its usefulness as a health and comfort promoting fraternity.

The simple fact that comparatively few of the vast number of reparative dental operations reach that high standard while so many prove effective tooth savers gives point to the question, "Is it necessary?"

Limitations and Failures of Gold.

It is admitted, indeed, it is generally held by the profession, that in all desperate cases, whether due to so-called "weak teeth," or to exceptionally vicious surroundings, gold as a filling material should better be avoided. Why? We do not recognize that gutta-percha, usually in such cases substituted for it, has any marked germicidal properties, and in many reported cases where gold had to be abandoned we are assured that the failure was not due to defective workmanship of any kind or character. Why is it that when gold is used it is so important to thoroughly remove all infected tissue, to extend the filling so largely beyond the limits of the original cavity, and to be so exacting at every stage of the operation to avoid failure by recurring decay, while with gutta-percha complete arrest of the destructive agent requires so little of this? To make it plain, If gutta-percha, while retaining its excellent tooth preserving properties was as sightly as gold and as well able to bear mechanical stress, would the question, which to use, as between the two, ever arise? or would the question we are discussing tonight be deemed important?

In my own practice, in treating approximal cavities, I use it wher-

ever I can, keeping the opening to the cavity as small as possible, even to retaining weak frail edges when they are not especially exposed to stress. I consider it a mistake to invariably break through to the occlusal surface; my experience has been that in many cases the arched form of the approximal occlusal edge enables it to preserve its integrity a long time, especially when favored by the opposing teeth. In many cases, especially of the bicuspid teeth, when the operation is complete there is nothing to show that a filling has been inserted. Now, regarding these, two things I feel safe to say *I know:* first, I know that in many such cases all the affected tissue was not removed; second, when I see these cases after an interval of ten, fifteen or twenty years, and find the tooth and the filling in as perfect a condition as when the operation was performed, as I do in hundreds of instances, *I know,* that the filling has been a tooth saver. *I know,* that in those cases it has not been necessary to so extend the cavity as to bring its marginal lines beneath the gingival gum septum, nor yet to extend the cavity sidewise to counteract the mischievousness of microbic plaques, in order to secure the salvation of those teeth.

Now, I want to know, "Why has there not been recurring decay at the gingival margins of those fillings, if the theory on which extension is based be sound?" I want to know why those much talked-off microbic plaques are so destructive to the gingival margins of narrow approximal gold fillings and so harmless when the same cavities are filled with gutta-percha?

My experience in this matter is not at all uncommon, it has been general throughout the profession. It would be far more general were it not for the, to my mind, erroneous idea, that anything simplifying operations and making them easier for the patient and operator, anything that takes from them the semblance of requiring skill, and is not in itself artistic, is derogatory to the profession. I consider it a far more praiseworthy achievement to so arrest dental caries that its effects are invisible than to so do by making the damage done conspicuous; tooth saving, rather than a display of mechanical or artistic talent, should be our first object.

The advocates of extension for prevention take these small approximal cavities that respond so kindly to simpler fillings, break through the occlusal surface and include in the filling the entire area of the proximal surface without regard to its condition and still farther sacrifice sound tooth tissue to secure anchorage which so extensive a filling imperatively requires. They insist that the necessities of the case invariably demand this, the more zealous treating with scant courtesy the opinions and experience of those who differ. The simple fact that

for so many years teeth have been saved without recourse to this, and the farther fact that as yet the theory is a mere suggestion, warrants caution in its acceptance. We test the correctness of a theory by experience, and rest assured that any theory, however plausible or well supported by laboratory experiments, that seeks to undermine well settled experience needs a thorough revision. The laboratory work is valuable when suggestive, but not so when it becomes dogmatic, and assumes to controvert well established clinical facts.

The necessity of extension for prevention, if it exists at all, rests very largely upon a supposed necessity of using gold, and making all operations permanent. Do we consider the many changes constantly going on within the oral cavity? The change in form of the mandible as we pass from infancy to youth, from maturity to old age, and the associate changes this causes in the occlusal relation of opposing teeth; the changes wrought by attrition and by erosion, who can anticipate, provide for or prevent? The ebb and flow of microbic activity is at present beyond our control. Is it wise to sacrifice that which can never be replaced, when in so many cases the sacrifice will not be called for? Is it not wiser to temporize, to meet changed conditions as they arise, to hold something in reserve rather than risk all in one throw of the dice?

The Importance of Extending Cavity Borders.

By M. L. RHEIN, M.D., D.D.S., New York.

Before reading what I have written, I wish to say that occupying practically the same position as Dr. Johnson, I desire to call your attention to the remarks of Dr. Black, in which he endorses the article sent this evening by Dr. Johnson as expressing his views on this subject. You can judge for yourselves of the difference between the views expressed by Dr. Johnson, and those sent in the communication of Dr. Wedelstaedt, and I wish to refute the assertion made in the paper by Dr. Wedelstaedt, that extension for prevention represents the dentistry of 1900 as against the practice of 1879.

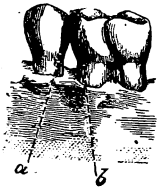
Dr. Black's Teaching Not New.

The practice presented by Dr. Black in 1891, in the *Dental Cosmos* and indorsed by Dr. Johnson in his book, is practically based on the views taught many years ago by Dr. Varney, and later so ably taught in clinics throughout the entire country and in his writings by Dr. Marshall H. Webb. I desire to emphasize that point, that Dr. Wedelstaedt is in error in stating that this practice is either new or recent.

Dr. Webb's book, "Operative Dentistry," was published in 1883, and was but a written record of what he had taught for years in clinics. On page 114 of that little volume appears an illustration (see reproduced figure) which clearly indicates the lateral extension "to self cleansing lines" as the phrase now is, but which he designated as making the margins "free." On pages 106-7 occurs the following language which summarizes all that Dr. Wedelstaedt thinks is so new:

"In the preparation of a cavity within the approximal walls of enamel of a bicuspid or molar, enough of the tissue toward the buccal, palatal or lingual wall must be cut away to free the edges, thus enabling the operator to so restore the contour of the parts, and so finish the filling or fillings as to keep the margins of enamel from contact with the tooth adjoining. This is the only way to keep the margins of enamel permanently separate, and thus prevent extension of decay.

"If solution of enamel or decay does not extend to or beneath the margin of the gum (and especially if calcification is imperfect), both



the enamel and dentine of the approximal, as well as of the buccal, surface of the tooth being operated upon ought to be cut away with fine burs to fully the thirty-second of an inch above the part where the gum closes around the tooth; so that, when the operation is completed, this part may be protected from particles of food. When the necks of the teeth are kept separate as in nature, and the gum is in normal condition, it protects the portion of enamel, and covers the well-inserted and finely-finished gold beneath its margins so perfectly that solution of the basis-substance of the tissue of the part, and even its discoloration, is prevented. When the gum is in normal condition, it is so close to the necks of the teeth as to prevent lodgment of foreign matter beneath its margins.

"The gum fills the space beneath the teeth almost entirely, and protects the parts it covers, and this tissue should always be guarded by full restoration of the contour of the missing enamel. The gold ought to be finely finished at all points, that there may be no obstruction to the tissue again closing around the neck of the tooth operated

upon. In this manner the margin of enamel at or near the neck of the tooth against which the gold is placed and smoothly finished is protected by the gum, and, if the whole operation has been properly performed, extension of decay at that point is prevented."

When accepting the invitation to take the affirmative on the subject of "Extension for Prevention," in reply to a paper by Dr. Ottolengui, I was led to believe that the basis of his essay would consist of a criticism of what appears on this subject in the recently published book of Dr. C. N. Johnson of Chicago, entitled "Principles and Practice of Filling Teeth." The resolution printed on the program reads as follows, "Resolved: That it is necessary to the future safety of carious teeth that the gingival enamel margins, in approximal cavities, should be extended so as to lie under the gingival gum septa." This leaves the inference that a general rule is laid down for all approximal cavities, irrespective of size, age or condition of patient, condition of structure, and character of local environment, and as far as I am concerned I could not, under any circumstance, take the affirmative in any such extremist form of practice as portrayed by Dr. Ottolengui. If I have correctly interpreted what Dr. Johnson has said and even what Dr. Black has written in '91, the essayist has misinterpreted their advice in certain forms of approximal cavities for a general rule for all cases. In other words, when Dr. Ottolengui claims that according to their teaching all approximal fillings are to be extended under the gum septa, I believe he places a wrong interpretation upon the teaching of these gentlemen. I could quote from pages 83 and 106 of Dr. Johnson's book and from pages 92 and 354 of Vol. 33 of the *Dental Cosmos* to indicate that neither of these men take any such extreme view but their written discussion here this evening will undoubtedly settle their position on this question.

Extension for Prevention.

It is impossible to discuss the question of "Extension for Prevention" and limit its application to extension under the septa of the gum. The consensus of recorded opinions on this subject conclusively show that recurrence of decay around the approximal filling generally occurs either at the gingivo-buccal or gingivo-lingual angle, points where food debris is most liable to remain. Consequently, the question of buccal and lingual extension are so closely connected with extension under the gingival margin that it is impossible to discuss one form and eliminate the other.

Dr. Ottolengui frankly admits that a cavity filled in the manner that has been described with the proper gingival, buccal and lingual extensions would be immune from recurrence of decay if the work

were thoroughly done, and I have a very strong belief that he carries this principle into his own practice in properly selected cases.

To my mind, the only question before the society for discussion is: "What are the proper cases for the practice of Extension for Prevention? This at once raises another question. Can we enunciate specific directions which can be theoretically followed with success by the student, upon this or any other method of practice? Every experienced practitioner, with even a fair modicum of success, will at once deny such a possibility. The theory of practice can be explained and taught, but the success of the young dentist will always hinge on the question whether or not he has chosen his proper calling in practicing dentistry. In other words, the successful dentist of today forms his opinion of how much extension to give an approximal cavity from the circumstances and conditions attending each individual cavity irrespective of any other case. Very little professional sanction should be given to despoiling the cosmetic appearance of the teeth in carrying out any such visionary forms of extreme mutilation as our essayist believes is advocated by some operators. Following in the same line of thought, only condemnation should meet unnecessary pain and anguish to the patient. How often, however, does the slipshod operator excuse his slipshod and useless filling on the ground of catering to the nervous apprehension of the patient? If gingival and lateral extension are called for in certain cases, they should be accomplished with as little strain to the patient as possible. Some patients can endure an entire day in the dental chair without strain or fatigue, while others will reach the limit of reasonable resistance within an hour or less. There is no reason, at the present day, why the latter, although their nerves are shattered, should not have their teeth properly preserved.

Methods of Painlessly Filling Large Cavities.

First, we have, at our command, all the obtundents, and, if necessary, the beneficent effects of cataphoresis, to make cavity preparation painless. Secondly, if gingival extension is indicated these cavities should be temporarily filled with gutta-percha, which should be packed in such a way that there should be no septa of gum to lacerate at the time of inserting the filling or polishing the same. In fact, in the large majority of cases, the polishing of the cervical portion of the filling should be accomplished as soon as the filling has been carried beyond the gum line. It is then a much simpler procedure than if left until after the completion of the filling and, at the same time, any fault of manipulation is more easily detected and repaired. Thirdly, a large gold contour is in no wise made a better filling because it is entirely inserted at one sitting. Gold properly packed

according to the principles enunciated by Marshall H. Webb, may be placed in a cavity in half a dozen sittings as effectively as in one, if the exigencies of any given case should demand such a course. A proper amount of time is essential, but this can always be divided up according to the endurance of any given patient. It is very difficult for me to reconcile my opinion of the essayist's practice with his attempt to convince us that the stamp of our approval should not be placed upon this form of operation because, forsooth, the poorly endowed dentist will find it beyond his capabilities, and that therefore we should lower our estimate of what is best for the patient to the level of the poorest amongst us. I am aware that this is the logic used amongst the trade unions for equalizing the price of labor. Is the essayist serious when he would carry this principle of sophistry into our profession and destroy all the ambitions which are kindled in the student's heart when serving gold foil at the side of some worthy master of our calling?

When Extension is Demanded.

Having attempted to destroy the imaginary wall of difficulties reared by the essayist against the feasibility and practicability of extension operations it may be fitting to say in a few words as far as is possible, when such operations are called for. It is almost inexcusable to prepare large approximate cavities, that naturally extend to the gum on any other lines than that of extension, as enunciated years ago by Webb, and lately by Black and others. We take it for granted that such cavities are not even under discussion. What then are the conditions that call for radical extension in the smaller sized cavities?

When approximal cavities are found in teeth which occupy an irregular position to each other, so that, on account of the malposition, it becomes well-nigh impossible for the patient to keep these places of irregularity clean, then radical extension is called for. This can perhaps be more readily understood by showing you a model of four approximal cavities in the lower left bicuspids and first molar which were undoubtedly caused primarily by the tipping forward of the second bicuspid so that its anterior occlusal surface is on a partial approximal angle with the first bicuspid. Lack of ability to keep these approximal surfaces free from food products which became continually wedged between the teeth resulted in caries of the four different sides. Model No. 1* shows their condition after partial excavation, and gutta percha was packed between the teeth to displace the gum line. Model No. 2 prepared in the same manner shows the comple-

*The models were very interesting, but cannot be figured properly to show the relations between the teeth.—EDITOR.

tion of the marginal preparation of the distal approximal surface of the second bicuspid and the mesial approximal surface of the first molar. Extension has been carried not only rootwise so that the gum septa will cover the cervical margin of the filling but the extension has also been carried laterally so that there will be no points of tooth structure at the gingivo-buccal and gingivo-lingual angles liable to infection, if reasonable care is observed in brushing the teeth.

Again, there are certain classes of our patients where, for one reason or another, it is absolutely impossible to maintain a clean hygienic condition of the oral cavity. This class is not a very large one if persistent methodical efforts are made in instructing patients in the manner in which they should clean their teeth and mouths. Yet, notwithstanding the most earnest co-operation on the part of some patients, it is impossible to bring about the necessary condition of oral cleanliness. Food debris will remain packed about the interproximal spaces, or in other cases the tooth surfaces will persist in being coated with soft cheesy like films with all the accompanying masses of bacteria. These are the cases which call for rootwise extension under the gum septa and laterally at the gingivo buccal and gingivo lingual angles. Where the various members of a family are under constant observation, it becomes an easy matter to determine as to when such measures are necessary. With more irregular patients, it is not so easy to decide whether or not the patient is using all reasonable measures to cleanse his mouth. In the mouths of such persons where bicuspid and molar approximal cavities are to be filled and there is a reasonable doubt of the patients' ability to keep their teeth clean—*extension* for *prevention* is most advisable. In this respect we can never forget one of Marshall H. Webb's favorite remarks that "caries can never attack solidly packed gold foil."

Management of Gingival Margins.

By S. G. Perry, D.D.S., New York.

I regret having allowed my name to appear as one of those expected to discuss this question, for I look upon it as one of great importance, and one that should be discussed in detail, and with the greatest care, and I have not found time to go over it in a satisfactory manner. In fact I have barely had time to re-read Dr. Johnson's articles as they now appear in book form, and to run over the proofs of Dr. Ottolengui's paper. I cannot, therefore, undertake to discuss the subject in a worthy manner.

I agree with Dr. Ottolengui in the main points of his contention, but I do so almost with hesitation, because Dr. Johnson has demonstrated to the profession the possession of such powers of observation, knowledge of mechanics, and such good sense that I think, at the outset, that I may not understand him. I agree with him in so much that he has written that it seems to me I ought to agree with him in this. Perhaps I would if I understood him better. At the very outset there is always danger of misunderstandings in such discussions as this. This is true to such an extent that I sometimes almost doubt the wisdom of any discussion that cannot be had directly over the patient, where the exact conditions explain themselves. Then, by a single glance, all are equipped for a discussion that shall involve no misunderstanding. Of course that is impossible, and we must do the best we can.

Dr. Johnson's Views Reviewed.

On page 82 of his book, Dr. Johnson on the subject of preparation of cavities says, "This question of extension is a matter calling for the most careful consideration. It is confidently believed to be a solution of the problem connected with a very frequent form of failure in this class of cases, and yet it must not be employed indiscriminately. There are many cases where it would be manifestly impossible and injudicious to cut the cavity to the extent indicated. Patients apply to us for these fillings occasionally in such a nervous condition that any extra cutting beyond the present necessities of the case must be avoided. We should never jeopardize the nervous system of our patient in order to carry out some heroic theory. Then, again, there are persons in whose mouths the tendency to caries is so slight that extension for prevention would apear to be an unnecessarily extreme measure. In some of these cases where there is limited decay, small fillings may prove serviceable for years. The age of the patient also has an important bearing on the question."

These are strong, clear words that must commend themselves to the ripened judgment of most operators. But on page 88 he says of the gingival wall, "This wall should be extended rootwise sufficiently to carry the margin of the filling well under the gum"; and on page 88 he says, "No tooth may be considered safe from recurrence of decay around proximal fillings unless the gingival wall has been carried sufficiently rootwise to bring that portion of the filling under the gum, and the gingivo-labial and gingivo-lingual angles have been extended to a point where these margins of the fillings are kept clean by friction." This seems to indicate a radicalism that I think will not be approved by conservative operators. In a certain way these statements seem to be inconsistent, but I think a careful reading of what precedes and follows each statement—which cannot well be quoted here—will show that such is not the case.

It only indicates that he is on both sides of the question, as anyone must be of any question, when there is a desire to be perfectly fair. A hasty reading of the chapter on preparation of cavities, however, leaves the impression that he inclines toward the radical treatment of approximal surfaces, and yet not quite, I think, to the extent indicated by Dr. Ottolengui's paper. But if he does not go to the extreme of cutting all cavities well under the gum, there are those who do, and it is this extreme practice that makes Dr. Ottolengui's paper timely and important, and that will lead me to make some remarks on radicalism in general before I am through. Dr. Ottolengui's paper is written in his usual clear style, and discusses itself, if I may use such a term. His line of argument is one that I think must appeal to most conservative operators. Instead of discussing it in detail I will for a moment consider the original question.

There are three distinct points which I think have not received the attention they deserve from either Dr. Johnson or Dr. Ottolengui. They are first, the ease and accuracy with which gold can be packed against the gingival wall, because its position allows the direct impact of the plugger point; second, the diminishing thickness of the enamel rootward, and third, the slight irritation of the gum almost invariably present when it lies over a filling of any kind, even though the tooth has been strictly contoured.

Value of Direct Pressure in Packing Gold.

At the outset in considering the first of these three distinct conditions, perhaps I will be pardoned for quoting from a paper of mine on "The Treatment of Cervical Borders" printed in the September number of the *International Dental Journal*, 1898. I then wrote:

"In the beginning I spoke of the inaccessibility and vulnerability of the cervical border. There is a qualifying condition which I have never heard mentioned. In every approximal cavity, in beginning the filling, the end of the plugger forces the gold squarely against the cervical border, and as the instrument is applied at right angles, the gold can be most easily and accurately adapted to the tooth with least force. As the curve of the cavity is reached on either the lingual or buccal aspect, this directness of application of force is lost, and this doubtless accounts for the fact that so many failures commence at this point, on either the buccal or lingual sides of the tooth. By the time the cavity is about one-third filled, and until finished, the instrument is packing along the sides of the walls, instead of squarely against them, and there must be less certainty of a perfect adaptation of the gold. This natural position is the redeeming feature of the cervical border, and has made it possible for many botch operators to make fillings that are successful at this point."

Since the publication of that paper I have become still more impressed with the importance of this idea. On page 87 of his book, Dr. Johnson even says, "The gingival margin of proximate fillings has often been alluded to as the 'vulnerable point;' even when fillings were well inserted, but this is hardly in strict accordance with facts. In reality decay seldom recurs along the gingival margin proper. It usually begins at the gingivo-labial (or buccal) and gingivo-lingual angles. From here it may extend and involve the entire gingival margin, but the initial point of failure is really at the angle."

If this is all true, and I think most close observers will admit that it is, it constitutes what seems to me to be a strong argument against the cutting of cavities under the gum. Of course this applies to cavities that are opened from the grinding surface, or at least to those that are filled from that direction. It does not apply to those that are opened and filled from either the buccal or lingual sides, except to serve as an argument against that practice, so far, at least, as the gingival and its opposite borders are concerned.

Enamel Thinner Toward the Gingival.

The second point is that of the diminishing thickness of the enamel rootward. A filling that terminates at the edge of the gum will be sure to rest against thick, firm enamel. If it is carried under the gum, the enamel will be thinner, and if carried far under it will be so thin that the only safety then will be in carrying it rootward to a point beyond the enamel. The region where

the enamel is very thin is a very dangerous one. If the thin enamel is left the gold must be packed against it with extreme care to avoid chipping it off. If it is all removed, and the cavity cut beyond it, on the root, there will be still two places (one on the lingual and one on the buccal side) where it terminates, and that anatomical weakness may be an additional reason why fillings often fail at either the lingual or buccal angles. This danger is escaped in cavities that are not cut under the gum (unless, of course, there has been recession) and constitutes another strong argument against such radical practice.

Gum Irritations From Edges of Gold Fillings.

The third point is that of the permanent irritation of the gum when it is detached from the root and left to rest over the edges of the fillings. I am aware that many accomplished operators do not consider this a serious objection. They point to the manner in which the gum will tolerate the presence under it of the edges of gold crowns, and they claim that well finished gold fillings are less irritating, as they are smooth and in no way an obstruction.

I am inclined to think their observation of these conditions has not been close and searching. My own opinion from the very first has been that the detachment of the gum from the root must establish an unnatural condition, and later years have only confirmed that idea.

I have seen a great many cases from my own hands, as well as from others, where large contour fillings have been made that of necessity reached well under the gum, and where there was a continual irritation of that tissue, even though the fillings were well finished, and perfectly smooth, and strictly contoured. Not long since I saw almost a mouth full of large gold fillings made by an extreme contourist, and the slightest prick of a fine excavator point on the gum between the teeth made it bleed profusely, and I was told by the patient that brushing of the teeth was always followed by bleeding of the gums. This was not a serious objection, and certainly it was slight when compared with the advantage derived from such splendid gold fillings. Yet it was a blemish, and one that is pretty sure to follow when a filling is placed under the gum, and one that cannot occur when it is not so placed, if the shapes of the teeth are fully restored.

Radical Operations Not Always Needed.

There are many other reasons why I am not in favor of this radical practice. Some of them have been well expressed in Dr. Ottolengui's paper. Perhaps one of the strongest is that, even admitting that radical operations are more lasting, yet they are not always called for. I do not think we are always called

upon to do perfect work in the human mouth. Very often work less perfect will save the teeth quite as well. To make such a statement renders me liable to the charge of lowering the standard which so many earnest men have striven so long and so hard to elevate. But what I mean is this: our first and highest duty is to save every tooth entrusted to our care with the least work, the least pain, and the least expense. In some mouths this can only be done with gold radically used; in some it can be done by the use of plastics, and still in some others by a combination of both.

Some teeth are so good and in such healthful mouths that a small gold filling on the approximal surface of a bicuspid or molar, for an adult, would probably last throughout life. Since that surface had run the gauntlet of the dangers of childhood, and the cavity was yet small, the chances are that a small filling would last. On the other hand, some teeth are so prone to decay that the only way to save them, even for a time, is to enlarge the small cavities so that the fillings shall have free edges and will go at least to the gum, and sometimes even under it as advocated by Dr. Johnson. Between these two extremes are many gradations, and he only is wise who can discriminate and be radical or lax, as the case may require.

It is our duty to keep the human mouth up to its best average. It is foolish to elaborately fill a tooth with gold, when all the rest of the teeth in the mouth have gone to pieces and cannot be redeemed, and when the filled tooth will soon follow. And, on the other hand, it is not necessary to become alarmed and enlarge small cavities when simple and easy fillings would save the tooth for many years. Beside, it is not a dreadful thing if, after a few years, decay recurs by the side of a small filling. With careful patients it is generally detected and can be repaired or refilled before great harm is done. And there is always in reserve the larger operation if it must be performed. It will then be no worse than if performed at first, and probably not so painful. Of course this is a very dangerous practice to encourage, for a recurring cavity, like a bird on the wing, may not be caught at the right time, and may go beyond easy control, but it is a legitimate factor to consider in striving to strike a fair and just balance between the reasons for and against.

Care of the Gingival Angles.

There is another point in the argument to be considered, and it is a very important one. I do not for a moment admit that any filling on any approximate surface is any better, or any safer, for the present—and only in rare cases in the future—by going under

the gum, than by going just to it, provided, of course, that the enamel border is perfect, and that the cavity near the gum is extended so that there is a free margin on both the lingual and buccal or labial sides. Those two angles are the dangerous places, and in my judgment are far more in need of wise and careful and even radical treatment than is the gingival border itself. If this is a sound argument, then the labor and pain and expense of the extra work has been unnecessary, and there has been saved some risk in the finishing of the filling, for of course the larger one is more difficult and more likely to be imperfectly done, considering the pain and the bleeding of the gums, for it cannot always be completed before the dam is removed. In fact, to be strictly fair in the argument, I think the advantage to the gum arising from a filling which leaves it attached, and which advantage dates in every case from the moment the work is done, is greater than the possible advantage that may come to the tooth if a recession of the gum should some day occur. And striving earnestly to be free from bias, I think the better protection of the neck of the tooth in case of future recession of the gum is the only real advantage of this radical practice. The recession, however, may never come. It reminds me of Mrs. Toodle's second-hand door-plate bought at auction with the thought that some day she might marry a man by the name of Thompson, and so have a bargain! I think the old adage "Sufficient unto the day is the evil thereof" can be safely applied in the care of the teeth.

Possible Evils Do Not Always Occur.

Over thirty years ago when I first became a convert to Dr. Arthur's system of separation of teeth for the prevention of decay, I wanted to run a disk or a file between the molars and bicuspids of a young lady whose teeth looked as if they were going to decay. Of course I hoped to prevent this by separating the teeth. The parents objected, and I asserted my professional dignity and we nearly had a row. It ended by my saying I had done my duty by suggesting the operation, and that I had no doubt if it was not done that time would demonstrate that I was right. But time did nothing of the kind—it demonstrated that I was wrong and that the old folks had better sense than I had. Very recently I saw the lady—now the mother of a large family of children—and nearly every one of the approximal surfaces of the bicuspids and molars are still untouched by decay! I was then young and radical; I am not willing to admit that I am now old, but I will acknowledge that I am conservative.

Dr. Perry's Earlier Methods.

It is in poor taste and tiresome to one's friends to refer to ancient history, but I would like to show where I have stood on this subject for a long time —in fact for a period extending over a quarter of a century, during which time I have consistently contended for the restoration of the shapes of the teeth, for the cutting of approximal surfaces in such a manner as to secure free margins, and for the extension of fillings even under the margins of the gums in destructive mouths. I want also to show that the results of that long experience have led me to be more conservative in the preparation of cavities, but even more radical in the matter of the strict restoration of the shapes of the teeth.

I am on record in the *Dental Cosmos* of November, 1870, with a paper read before the Odontographic Society of Philadelphia, in which I advocated the strict and sometimes even exaggerated restoration of the shapes of the teeth. But I had not then reached the conception of free edges for my fillings. In 1871 Dr. Arthur's book was published, and with many others I was caught napping and led astray in my practice on approximal surfaces. I got back home, however, after a few years and have never since ventured beyond the boundaries of the old homestead.

In May, 1877, I read a paper before the New York State Dental Society, in which I again advocated the restoration of the shapes of the teeth, and on that occasion I exhibited my first separators. This paper was published in the *Dental Cosmos* of May, 1879. In it, with the assurance of youth, I laid down the law in the following words:

"In most cases I should prepare my cavities in accordance with the following general rules. Teeth of good structure, in a healthy mouth, having small cavities, may be filled without cutting till the margins are free. Teeth of medium quality should be cut till the margins of the cavities are just free on the buccal and lingual sides, and if not cut through from the grinding surface, should be so cut as to allow the gold to come just in sight along the proximo-grinding surface borders, after the teeth have closed. Then the only danger exists at the cervical margin. In very frail teeth some small cavities may not be safe until cut up to, and sometimes even under the gum."

After twenty-four years I have no desire to change that statement except to make the last half of the last sentence a little more conservative.

In 1888 in a paper read before the Odontological Society of Pennsylvania, and published in the February number of the *International Dental Journal*, I wrote as follows: "There is still another side to the

subject that must not be allowed to pass without consideration. Partly by its own impulse the pendulum swings to the other side of the arc, and some of the best operators, repelled by the evils of permanent separations, have gone to the other extreme, and in their eagerness to restore the teeth, have cut them away far more than necessary, and have given themselves and their patients needless trouble in restoring them. In my judgment this was an error constantly made by both Varney and Webb. If this can be justly said of those accurate workers of gold, with how much more force does it apply to those who follow the same plan, but are not such accurate operators? I am fully convinced it is an error which I have many times committed, and it is one that anyone may easily fall into if he has not come to have what I will venture to call reverence for the natural teeth. It is one that has been encouraged by the use of the dental engine, and by the use of cohesive gold."

In the same paper I also said: "The ideal filling on the approximal surface of a bicuspid or molar is one that shall be large enough so that on close inspection its margins shall be in sight, and thereby safe from capillary attraction on all sides except along the cervical border. But it shall not be large enough to be seen by the non-professional observer, nor shall it go under the gum, nor tend to weaken the great arch that connects the two domes or cusps of the teeth. It shall not be filed or finished down to a flat surface, but in outline it shall follow the contour of the original tooth. On such a protected surface decay is no longer possible, and it is not too much to say that such a filling renders the tooth safer than if it had never decayed and been filled at all. This filling is one that can very often be made. If the decay is very slight it will not be easy, and if the teeth are of good structure, it will not be advisable to get the free margin. If it is extensive it will not be possible to save the great grinding surface arch."

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"The advantages of this ideal filling is that the shapes of the teeth are perfectly kept; the great arch of enamel that binds the two cusps together is not broken, and yet by extending from the lingual to the buccal side, even if not to a free edge on the grinding surface border, the vulnerable part of the tooth is completely protected. It is well known that decay generally begins just above the absolute point of contact,—in fact, on the surface that would be covered by such a filling as this. Still another advantage is that the gum is not disturbed in the least. At the cervical border I do not cut under the gum as much as formerly, but I leave the diminishing enamel, whenever it can possibly

be left, for I can never hope to carry the filling under the gum and finish it so as to get quite as good a condition of this easily inflamed tissue as when it rests on its native enamel."

Thirteen years have elapsed since this paper was written, but I have no desire to change a word of it. I make this quotation, giving the dates to show the slight change of opinion caused by this longer experience. It bears directly on this subject and it seems to me is a fair argument, for none of us change our views without reason.

I want to go a little further with this ancient history and tax the patience of my long-suffering friends a little longer with another quotation from it, even though it bears only indirectly on the subject of the evening. It relates to what I will venture to call heavy-handed dental practice. The quotation is as follows:

"I want to call particular attention to this filling that I have called the ideal one. There are some very interesting facts grouped about it, and I cannot resist the impulse to sound the alarm in reference to a method of making these fillings, which, like the practice of making permanent separations, is full of temptations and dangers. I refer to what I have already alluded to and condemned, the habit of cutting boldly down from the grinding surface in order to get at the cavities, and to be able to fill them more rapidly and more easily. As with permanent separations, though in nothing like the same degree, I speak with sad experience of this practice. In that early period before alluded to I used the Varney pluggers for most operations, and as they were nearly all straight instruments with heavy shanks it was necessary to open freely into all cavities to be filled with them. It was also my habit then to use more cohesive gold than I use today, and of course this necessitated a free, wide opening into all cavities. The result of this practice was in the first place a great deal of cutting, and in the second place a great deal of filling; and then a great deal of finishing. And after it was all done, although there was strength and promise of durability, yet there was a great mass of gold, and an artificial condition that was not pleasant to contemplate. The result of that practice leaves many bicuspids filled on both approximal surfaces, the great arches gone, the fissure between the two fillings filled, and the great domes of the cusps standing alone, greatly weakened and ready to split off if a shot from a game bird, or a splinter of bone from a chop is caught and wedged between them by the sledge-hammer blows of the lower jaws. The enamel does not coalesce in the fissure, so that the strength lies in what I will call the enamel rim around it. If this rim is cut, as is generally done in filling even small

cavities on the approximal surfaces, much strength is irretrievably lost, and the first step in the downward course of the tooth is taken.

In these days of matrices there are great temptations to cut through this rim, even for the filling of small cavities. Separators with all their possibilities for good in careful hands must come in for a share of blame here, for as men abandon the habit of preliminary wedging, and depend upon the separator, in addition to the slight space that can be comfortably made with the screw, there is the temptation to take a little off the grinding surface border of the tooth in order to reach the cavity and complete the operation at a single sitting. This is an ever present temptation, and is so potent that with firm teeth I often guard against it by still resorting to slight preliminary wedging with tape two or three days before operating."

I make this quotation here to reiterate and emphasize my protest in a general way against radicalism in dental practice. It would seem as if our profession had grown wild with delight over the discovery of what can be done with gold, and losing sight of its true mission, had gone on an irrepressible rampage with its pluggers and its mallets, its buzzing machines and finishing tapes! I make bold to speak in this way, for I knew this delirium in the early days, and have a trace of it still, which I try to hide. Did you ever know a man who, after having the delirium tremens, was not a little shy about it after he had recovered?

Reverence For Natural Tooth Structure.

About thirty years ago, right after the publication of Dr. Arthur's book, wanting to coquette a little with his system, and desiring to be braced up, as often happens when we contemplate a departure from the path of rectitude, I said to Dr. C. R. Butler—I would call him Charlie if this were not supposed to be a dignified paper—that, if dangerous between the bicuspids and molars, the system could do no harm when applied to the lingual surfaces of the front teeth. In reply he said he could not quite bring himself to the point of cutting away the under plate of enamel, if sound—that somehow he had too much reverence for the natural teeth to cut them away any more than was absolutely necessary. He has forgotten this—but I have not. It has sounded in my inner ear down all these years!

Men make pilgrimages around the world to visit mouldering ruins and stand in awe before old temples built by man, and even take off their shoes when they approach the tomb of Adam, but how many dentists are there on earth who would uncover in the presence of a tooth—one of the most perfect examples of the Great Artificer's work—

unless it would give them a better light and enable them to more readily get at it with their burs and chisels?

I can have no difference with him who strives for a high ideal in work. Work would be dull indeed and ineffectual without such an incentive. But what is a high ideal? Ah, there's the rub! The answer will depend upon the individual. Inevitably a man's work will be a reflex of himself. With one full of red blood and vigor and self-assurance it will consist in the making of perfect gold fillings in every part of the mouth without regard to the labor required, the pain inflicted, and expense incurred. Such a man is so full of vitality that he must burst forth in some such way. There are centuries of impulse in his veins and he could not restrain himself if he would! Ostensibly his perfect work is done for the good of his patient, and it frequently so results, but often to the unbiased observer there may be a lurking suspicion that unconsciously it is prompted by a delight to show what can be done with tools, and to demonstrate that he is one of the best operators on earth. He is unhappy if his work is not seen and admired, and he defends it with the dogmatism of his kind. To one who sees our profession from the mechanical side, such work may be beautiful to contemplate, and presents a standard to which, in his estimation, all should aspire.

To another operator a high ideal may consist in doing what might be considered poor work! It might sometimes even consist in puttying in gutta percha! I can imagine a man who, though equipped for and able to do as perfect work as can be done—as demonstrated by ample tests—is yet not afraid to putty in a filling if it seems best for his patient. He has no especial care about his reputation as a mere worker with tools, but he is in dead earnest in his desire to do the wise and right thing for his patient. He would rather underdo his work on the human teeth than overdo it. He can overdo it some other day if he desires, but eternity is not long enough in which to undo what he has overdone. He is not vitalized to the point of having supreme confidone in himself. He has no desire to make over the universe—he is content if he can patch it up! He stands for the other extreme. His head may be too small, and his conservatism may be too great. He may bank too much on his experience, and without knowing it may also be dogmatic in his way.

Somewhere between these two types will be found the wise, all-round, safe man, and I do not think he will cut all approximal cavities under the gum.

Dr. Ottolengui Closes the Debate.

It is necessary that a reply should be made, although the hour is late. As to Dr. Black's complaint about the use of his figures; in regard to Fig. 1, there is no misrepresentation, because I say: "I here introduce an illustration which indicates that the gingiva should be really under the gum." It was not introduced to indicate that he cuts all teeth away, but merely to show that he really extends the filling under the gum. The language as to Fig. 2 and 3 is also quite free from the criticism made. It is possible that the use of them in juxtaposition may have led some to believe that he cuts the cavity shown in Fig. 2 to the extent seen in Fig. 3, but I meant only that with the gingiva as he has indicated in Fig. 3 coming very nearly down to the contact point, he still carries the gingival margin to the extreme point shown in his own diagram. Dr. Wedelstaedt says that I make the statement that distal fillings in molars and bicuspids are more difficult to polish than mesial fillings. That would be excusable if he were listening to the paper and taking part in an extemporaneous discussion; but it is not excusable when he had the paper before him to read. I said the preparation and filling would be more difficult in distal than in mesial cavities. I know as well as he does that you can draw a piece of sandpaper around a distal surface more easily than a mesial. Dr. Johnston calls attention to the fact that there is a vulnerable area on the tooth prior to decay. He asks me, if I admit that there is such an area, and that the filling in that tooth makes that tooth less likely to decay than one which is not filled, why is it not true that the larger the filling, and the more of that vulnerable area there is covered, the less likely will the tooth be to have a recurrence of decay? I answer that right straight from the shoulder. Where does recurrence of decay find its inception? Is it not somewhere along the margin? Is it not somewhere where there is contact between the filling and the tooth? or does it occur in that area which I do not reach when I do not extend beyond that area, which we all admit is to a certain extent vulnerable? Does the new caries start just as the old caries did, in an unfilled surface of the tooth, and gradually approach the filling, or does it not start exactly at the contact, somewhere between the gold and the tooth? In other words, does it not start somewhere along the margin? I think you will admit that it does start somewhere along that margin, and if you do, you must admit that the larger the filling, the larger the margin, and the greater the vulnerability to decay.

Now let me return to Dr. Wedelstaedt and have a little fun with his figures. He sent a most wonderful set of statistics. He found 100 teeth in his laboratory, of which eighty-five per cent showed recurrence of decay. But when we come to analyze that statement, we find that

eighty per cent. were filled with amalgam. I have never claimed that amalgam would save the teeth. In a discussion of cavity shape we cannot build statistics on failures with a material which itself alters in shape. Therefore I throw those eighty out, and I find only twenty worth considering, and of those twenty gold fillings five have some recurrence of decay. Thus his statistical percentage of recurrence is reduced from eighty-five to twenty-five per cent. But that is not really what it amounts to. It simply comes to this: in Dr. Wedelstaedt's laboratory, there were five teeth filled with gold by heaven knows whom—which had some recurrence of decay around them. That does not prove anything about any theory, Dr. Black's, or mine, or anyone's else. It simply proves that five dentists sent him some specimens of poor work. So much for statistics.

We have been told tonight that the recurrence of decay is not along the gingival margin proper, but at the labio-gingival angle, or the linguo-gingival angle; but the labio-gingival angle is one end of the gingival margin, and the linguo-gingival angle is the other end. So all that resolves itself into is that whilst there is decay along the margin, it occurs first at the two ends of the margin.

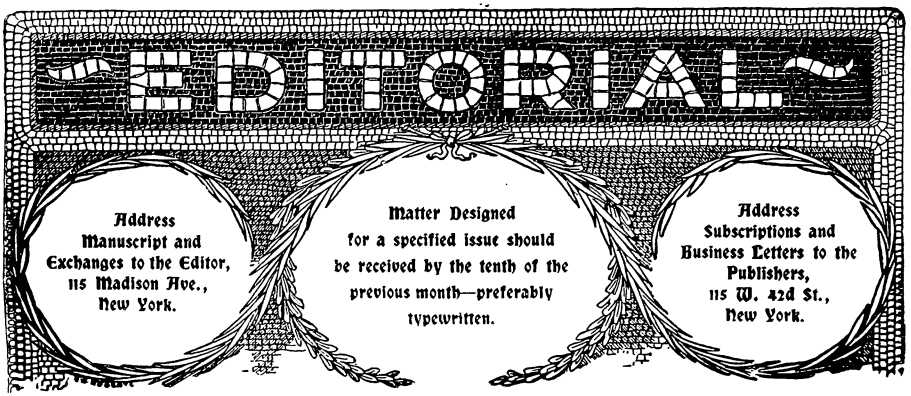
Unless it can be proven that somewhere below the gum margin there is a territory which is immune to decay, there is no reason for so extending fillings. It has not been proven. It has simply been stated to be a fact. It has been stated by Dr. Black, and again by Dr. Wedelstaedt tonight, that even badly fitting gold crowns, which go under the gum, and even badly made gold fillings, do not come back with recurrent decay. I have seen hundreds of cases of recurrence of decay under those circumstances, and whatever my experience may prove to others, it proves to me that that is not an area of rigid immunity. Something besides extending the cavity there is needed to make it forever safe. Two of the gentlemen claim that I said a cavity perfectly finished and polished will make it perfectly immune. I did not say so. I said as immune as man's hand can make it. Unless it can be shown that the area under the gum is immune, then the whole argument falls to the ground.

I want to ask two favors. I want to see if I stand alone. Are there any gentlemen in this room who have seen caries above a gold crown, where the edges of the crown went under the gum? If anyone has seen caries in that situation, I would like him to hold up his hand.

There are eleven witnesses. I am not alone.

How many have seen caries recur around fillings, the margins of which went under the gum?

I find about thirty or forty hands up. It is our clinical experience, then, that under the gum is not necessarily a region of immunity.



The Administration of Chloroform by Dentists.

One of our readers residing in British Columbia has requested an editorial opinion upon the right of dentists to administer chloroform. He states that he and his partner have administered chloroform hundreds of times successfully, for extractions and other minor operations. He, evidently, has some doubt as to the safety of this course, as he expresses the belief that were he to have an accident, which would cause an investigation, the medical men in his section might testify against him.

We cannot speak authoritatively in regard to the laws in Canada, but it seems to be well known, especially in this country, that qualified practitioners of dentistry have at least the legal right to administer anesthetics. There is an erroneous idea that death under chloroform, administered by a physician, would pass unnoticed by the authorities, while death under similar circumstances, in the office of a dentist, would subject the dentist to a legal inquiry.

There is really no difference whatever in the circumstances from the legal standpoint, and the authorities would inquire into the facts whether the anesthetic had been administered by physician or dentist. If the testimony showed that due caution and skill had been exhibited, the practitioner would be relieved of responsibility. Should the facts prove otherwise, a physician would be jailed quite as quickly as a dentist. So much for the right of a dentist to administer an anesthetic.

Advisability of Administering Anesthetics.

The question as to the advisability of resorting to general anesthesia in dental practice is an entirely different matter, and must be settled by each person according to his best judgment, and in relation to the special case in hand. Broadly speaking, it would not seem justifiable to take the risk of administering chloroform or ether for an ordinary extraction, while it might be absolutely necessary in a case of an impacted tooth, or the excision and removal of root ends in treatment of alveolar abscesses. It should be remembered, however, that anesthetics, as administered by physicians, are handled usually quite differently from the methods employed by dentists.

Nearly all operations requiring full anesthesia are performed in hospitals, or in offices where the surgeon has a number of assistants as well as all means ready at hand with which to meet and combat accidents. The patient is disrobed, is recumbent, and consequently in an entirely different attitude from that of a fully dressed, corseted woman seated in a dental chair. This alone would probably make sufficient cause in the minds of the authorities for the punishment of the dentist, should he lose a patient under such circumstances.

It would seem wise for the dentist to resort to general anesthesia only when driven to it by necessity, and then if it be impossible to have a medical man as the anesthetizer to assist him during the operation, he should take command of the case with the authority and confidence of the regular surgeon, and should not hesitate to have his patient sufficiently freed from tight garments and in the proper position to reduce the risk to a minimum.

The Prize for Models.

In our October number for 1900, we announced that a gold medal would be given for the best plaster models of a case of irregularity made by an undergraduate student in any dental school in the United States, and it was stipulated that models should be delivered not later than March 1st, 1901.

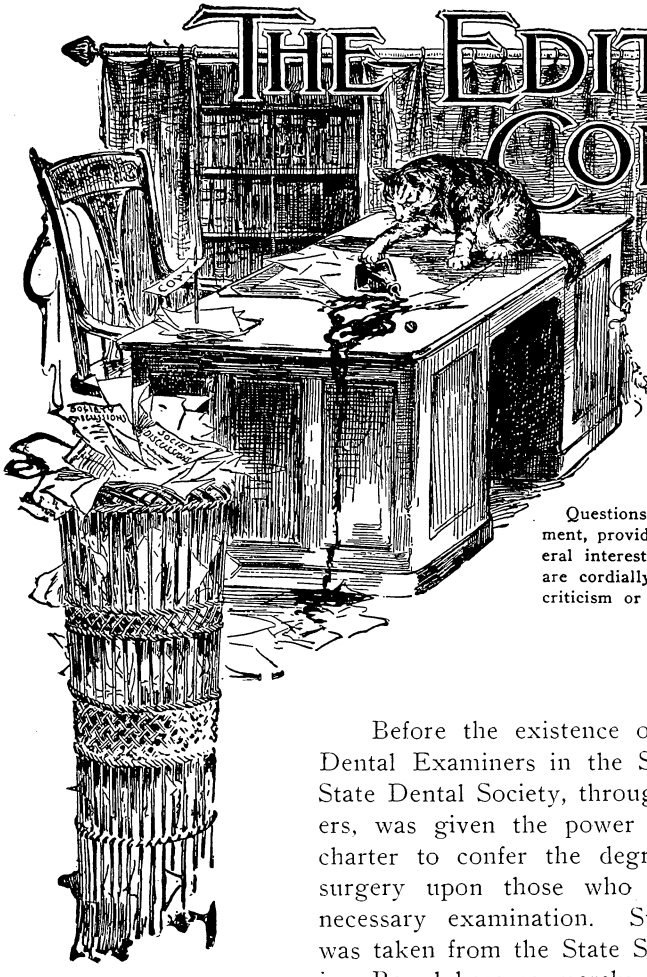
This notice was reprinted and sent to each college in the United States, together with a letter to the professor asking that the same should be posted conspicuously on the bulletin board. It was hoped in this way to inspire some interest in the competition, and it was confidently expected that one or more hundreds of models would be sent in. Indeed, some of the professors wrote promising co-operation.

At the date named as the close of the competition, but one set of models had reached this office; consequently with regret we are compelled to announce that there has been no competition, and consequenty no prize can be awarded. Comment on the lack of interest in the matter by the college professors would seem to be superfluous. Evidently, the importance of skill in model making counts for little in the curriculum.

Important Matter Omitted.

We regret that we are compelled to omit numerous papers prepared for this issue, owing to the length of the report of the meeting of the Second District Dental Society. We accord the unusual space occupied by this report because of the tremendous practical importance of the subject which has been ably handled by prominent men on both sides of the debate. We are also desirous of giving the matter prompt publication, in full, because a similar discussion of the same subject is to occur before the Chicago Dental Society in May, and it seems advisable that these papers should be in the hands of those who will attend the Chicago meeting.

Among the more important papers omitted from this issue is the first of Prof. Goslee's series on Crown and Bridge Work; an interesting contribution from Dr. Thomas B. Mercer, accompanied by some really magnificent illustrations of models in orthodontia, made by photography and half tone; a most valuable essay by Dr. W. A. Price on the use of the X-ray in dentistry, accompanied by a great number of the most beautiful dental skiagraphs ever published; and an illustrated article on porcelain work by Dr. W. A. Capon of Philadelphia. All of these and other interesting matter will appear in our next number.



THE EDITOR'S CORNER

With malice toward none, with charity for all.

Questions will be answered in this department, provided the answers would be of general interest. After publication our readers are cordially invited to make further reply, criticism or comment.

Before the existence of the present Board of Dental Examiners in the State of New York, the State Dental Society, through its Board of Examiners, was given the power by the State under its charter to confer the degree of master of dental surgery upon those who successfully passed the necessary examination. Subsequently this power was taken from the State Society, and the Examining Board became merely a board to examine applicants for licenses. Some effort at that time was made to abandon the degree of M. D. S., but such opposition to this course was made that a compromise was effected whereby the degree could be granted by the Board of Regents only to those who already held a college degree, and had lawfully practiced dentistry for five years. By this act, M. D. S. was practically made a post graduate degree.

New Law in Relation to M.D.S.

A new law has just been passed by the State Legislature, and has been signed by the Governor, which, in effect, abolishes any further power to grant the degree of M. D. S., the intent being an effort towards the unification of dental degrees

throughout the United States by the elimination of the special degree which, heretofore, has been granted only in New York State. The new law reads as follows:

"No degree in dentistry shall be conferred in this state except the degree of doctor of dental surgery. Said degree shall not be conferred upon any one unless he shall have satisfactorily completed a course of at least three years in a registered dental school, or having been graduated in course from a registered medical school with the degree of doctor of medicine shall have pursued satisfactorily thereafter a course of special study of dentistry for at least two years in a registered dental school; nor shall said degrees be conferred upon any one, unless prior to matriculation in the institution conferring his professional degree, or before beginning the second course of lectures counted toward such degree he shall have filed with said institution a regents' certificate that he has received the required preliminary education evidenced aforesaid; provided further, however, that the regents may confer upon all persons who shall have received the degree of master of dental surgery under the laws of this state, prior to the taking effect of this act, the degree of doctor of dental surgery in lieu of said master's degree."

Failure of N. A. D. E. To Act.

In the summer of 1899, we published an article reflecting upon the granting of licenses in the State of Illinois to graduates of the German-American Dental College. During the next meeting of the National Association of Dental Examiners at Niagara, this article was discussed, and a great deal of evidence was handed to a special committee of that association who were instructed to investigate the matter and report. This seems to have ended in nothing; at least since that time, it is not on record that the National Association of Dental Examiners has done anything to rectify the mismanagement of affairs in the State of Illinois. In Germany and other European States, however, the matter was considered to be of considerable importance, especially to the American dentists abroad who held the honor of American degrees as being worthy of some defense.

We published, last month, a communication from the American Dental Society of Switzerland bearing on this subject, and the following is a significant quotation from a letter received from Dr. L. C. Bryan:

"Four American Consuls in Germany met at a gathering of dentists, all of whom held the American degree of D. D. S. This meeting occurred in Heidelberg on the 24th of March, and we informed them pretty fully what damage had been done to American dental de-

grees through the swindling concerns of Chicago and Huxmann's School. They intend to report to the government on the subject, and to request that governmental influence be brought to bear on the Governor and State officials of Illinois, to see if something cannot be done to redeem the reputation of American institutions of learning, all of which have suffered abroad by the irregular issuance of diplomas from Chicago."

Thus it appears that the duty which has rested at home, and, perhaps especially with the National Association of Dental Examiners, has at least been undertaken, and apparently will be performed by the few Americans who are living abroad; a fact which does not redound to the credit of the National Association of Dental Examiners who have so frequently declared that their organization was for the betterment of existing affairs. It seems quite time that this association should stop talking and begin performing. The government of the United States, and of the separate states, is so peculiar that, of course, it is not legally possible for any of the United States officials to interfere with the internal affairs of Illinois, but perhaps when a foreign government, through our Consuls, makes complaint to the Department of State, and this complaint is forwarded to the Governor of Illinois, our friends in that state may awaken to the fact that it is time for them to clean house.

Meeting of the Southern Branch of the N. D. A.

Announcement is made of the meeting of the Southern Branch of the National Association to be held July 29, at Nashville, Tenn. This seems to be a bad blunder on the part of the officers, because it must be evident that the selection of a date so close to that of the meeting of the main body will tend to decrease the number of Southern men at the Milwaukee meeting. Thus, we have, in effect, a repetition of the old days when the American Dental Association and Southern Dental Society held meetings in conflict rather than accord. Was it not understood that meetings of branches of the association should be held at such times as would not detract from the attendance at the National?

National Society Meetings.

National Dental Association, Milwaukee, Wis., August 6.

National Association of Dental Examiners, Milwaukee, Wis., August 2.

National Association of Dental Faculties, Milwaukee, Wis., August 1.

State Society Meetings.

Alabama Dental Association, Montgomery, May 15.

California State Dental Association, Los Angeles, July 9, 10, 11, 12.

Colorado State Dental Association, Denver, July 9, 10, 11.

Connecticut State Dental Association, Hartford, May 21, 22.

Delaware State Dental Society, Wilmington, June 5.

District of Columbia Dental Society, Washington, December.

District of Columbia Dental Society, and Maryland State Dental Association, Baltimore, Md., May 16, 17, 18.

Florida State Dental Society, Tampa, May 22, 23, 24, 25.

Georgia State Dental Society, Macon, June 11, 12, 13, 14.

Illinois State Dental Society, Rockford, May 14, 15, 16, 17.

Iowa State Dental Society, Clear Lake, May 21, 22, 23.

Kentucky State Dental Association, Louisville, May 14, 15, 16.

Maine Dental Society, Old Orchard Beach, July 16, 17, 18.

Massachusetts Dental Society, Boston, June 5, 6.

Minnesota State Dental Association, Duluth, August 1, 2, 3.

Mississippi Dental Association, Yazoo City, June 11, 12, 13.

Missouri State Dental Association, Sedalia, July 9, 10, 11, 12.

Nebraska State Dental Association, Omaha, May 21, 22, 23, 24.

New Jersey State Dental Society, Asbury Park, July 17, 18, 19.

New York State Dental Society, Albany, May 8, 9.

North Carolina State Dental Society, Morehead City, June 26, 27, 28.

Ohio, Michigan and Indiana State Dental Associations, Indianapolis, June 4, 5, 6.

Ohio State Dental Society, Columbus, December 3, 4, 5.

Oklahoma Dental Association, Oklahoma City, May 7, 8, 9, 10.

South Carolina State Dental Association, Charleston, June 4.

South Dakota State Dental Association, Sioux Falls, June 11, 12, 13, 14.

Tennessee State Dental Association, Monteagle, July 2.

Texas State Dental Association, Sherman, May 14, 15, 16.

West Virginia State Dental Society, Mannington, August 29, 30.

Southern Branch, National Dental Association.

The fourth annual meeting of the Southern Branch of the National Dental Association will convene July 29, 1901, at Nashville, Tenn.

C. L. ALEXANDER, Corresponding Secretary.

Charlotte, N. C.

The National Association of Dental Examiners.

The nineteenth annual session of the National Association of Dental Examiners will be held at the Plankington Hotel, Milwaukee, Wis., Friday, August 2, commencing at 10 A. M., and continuing Saturday and Monday. Arrangements are under way for those residing in the Middle and Eastern States for reduced fare by the Lehigh Valley Railroad from New York and Philadelphia.

Full particulars in June dental journals.

CHARLES A. MEEKER, D.D.S., Secretary.

New Jersey State Dental Society.

The thirty-first annual session of the New Jersey State Dental Society will be held in the Auditorium, Asbury Park, N. J., commencing

Wednesday, July 17, 10 A. M., and continuing in session Thursday and Friday.

The "Columbia" adjoining will be the headquarters, with rates of $2.50 and $3.00 per day.

To the busy practitioner who desires to witness the latest and best in clinical dentistry,—"come." Fifty clinics.

The best and newest efforts in the science of dentistry—come and hear five papers read. For a veritable museum of the latest in electrical appliances, mechanical tools, the chairs, instruments and accessories of the modern dental office. Come and see us and mark the days off now. The time will not be wasted; you will see the contents of not only one dental depot but of all the country. The best efforts of the inventions pertaining to our profession up to date. The city dentist as well as the one from the cross road can all see and learn something.

CHARLES A. MEEKER, D.D.S., Secretary.

29 Fulton St., Newark, N. J.

Illinois State Dental Society.

The thirty-seventh annual meeting will be held in Rockford, May 14 to 17 inclusive. All members should make an effort to be present. The society is always glad to welcome reputable dentists, who are not members, from this and other states.

The local committee has arranged for an informal reception on Tuesday evening in the parlors of the Hotel Nelson. A short program has been prepared, and all in attendance are cordially invited to be present and spend a sociable evening.

A. H. PECK, Secretary.

92 State street, Chicago, Ill.

Maryland State Board of Dental Examiners.

The Maryland State Board of Dental Examiners will hold examinations for certificates to practice dentistry on the 7th and 8th of May, 1901, at the Baltimore College of Dental Surgery, corner Eutaw and Franklin streets, Baltimore, Md.

Application blanks and all information will be furnished by the undersigned.

F. F. DREW, Secretary.

701 North Howard street, Baltimore, Md.

Georgia State Dental Society.

The Georgia State Dental Society will meet at Macon, Ga., June 11, 12, 13, and 14. Its officers are: President, W. H. Weaver, La Grange; First Vice-President, H. H. Johnson, Macon; Second Vice-President, A. M. Jackson, Milledgeville; Treasurer, H. A. Lowrance, Athens; Recording Secretary, S. H. McKee, Americus; Corresponding Secretary, O. H. McDonald, Atlanta.

O. H. McDONALD, Corresponding Secretary.

Atlanta, Ga.

Texas State Dental Association.

The next annual meeting of the Texas State Dental Association will be held May 14, 15 and 16, at Sherman, Tex. The profession are cordially invited.

O. B. LOVE, President.

J. G. FIFE, Secretary, Dallas, Tex.

Ohio State Board of Dental Examiners.

The next meeting of the Ohio State Board of Dental Examiners will be held in Columbus, O., beginning Tuesday, May 28, 1901. Applicants must bring excavators, pluggers, clamps, rubber dam and filling materials.

For further particulars and application blank address:

L. P. BETHEL, Secretary.

Kent, O.

Minnesota State Dental Association.

The eighteenth annual meeting of the Minnesota State Dental Association will be held in Duluth, Minn., on Thursday, Friday and Saturday, August 1, 2 and 3, 1901.

G. S. TOOD, Secretary.

Lake City, Minn.